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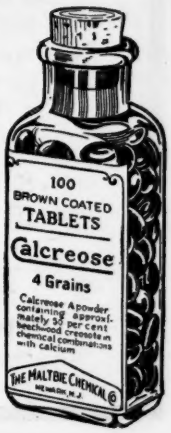

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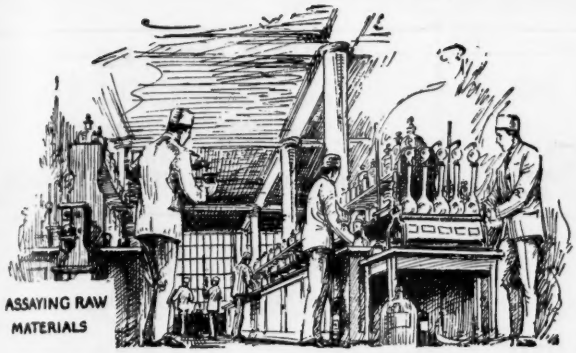

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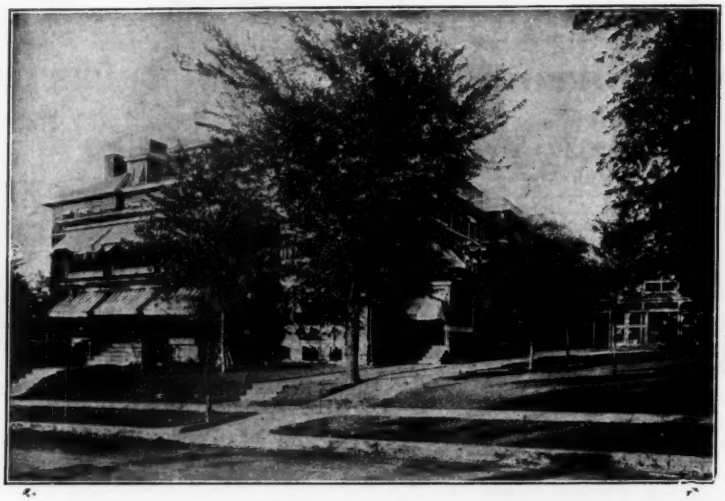

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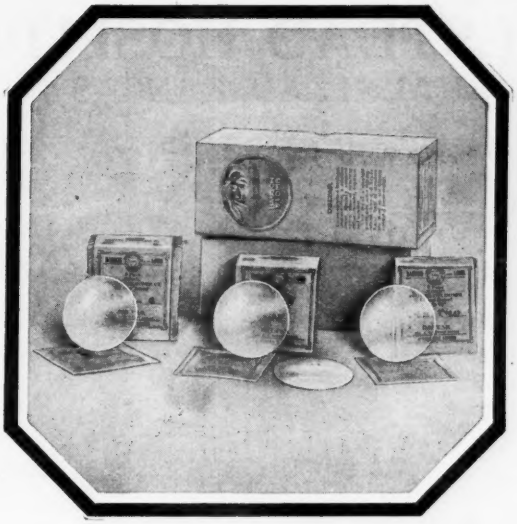

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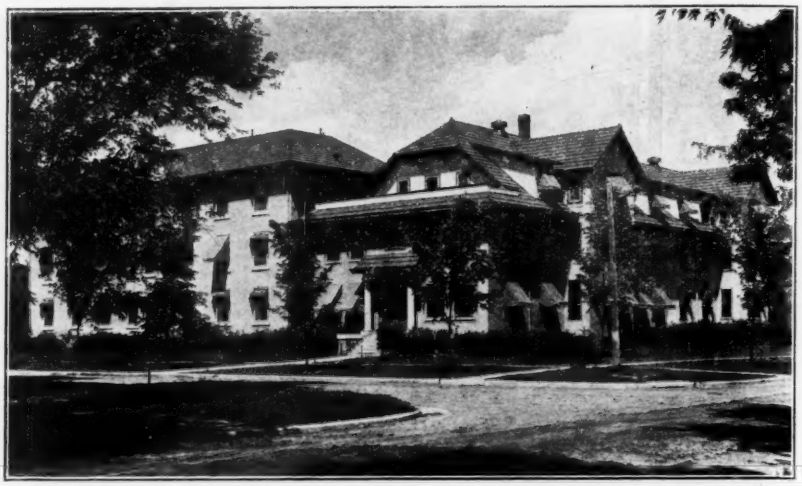

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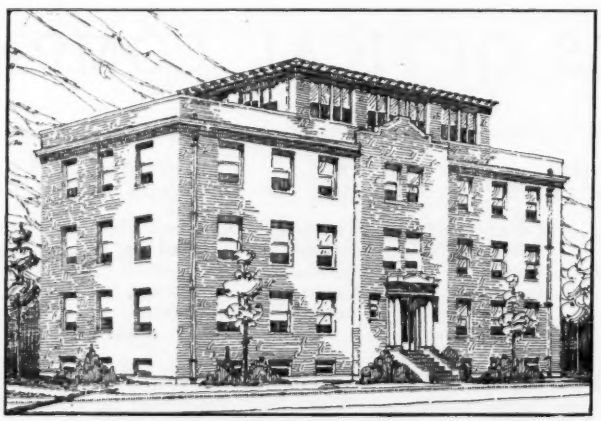

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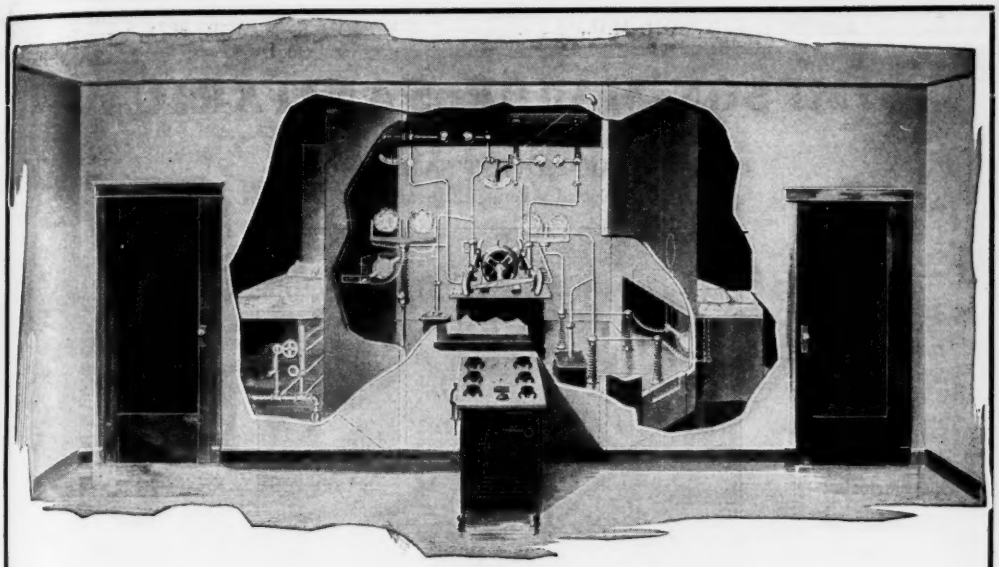

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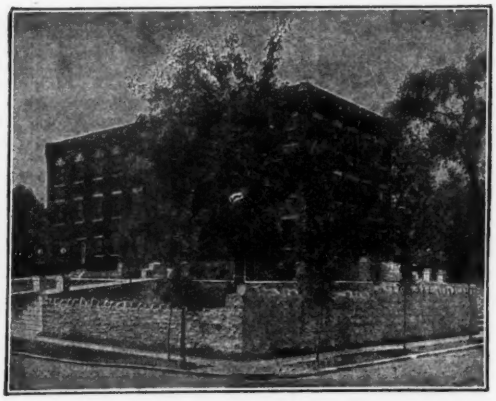

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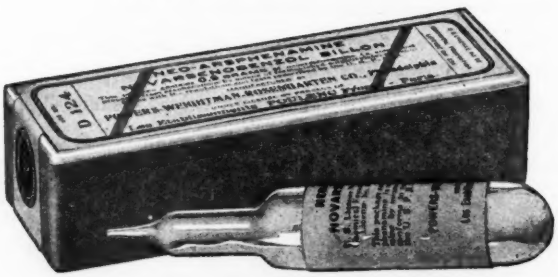

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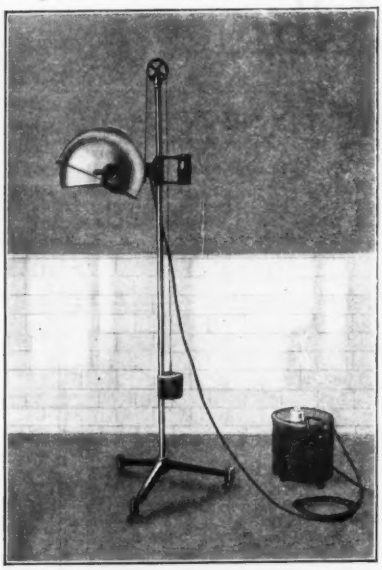

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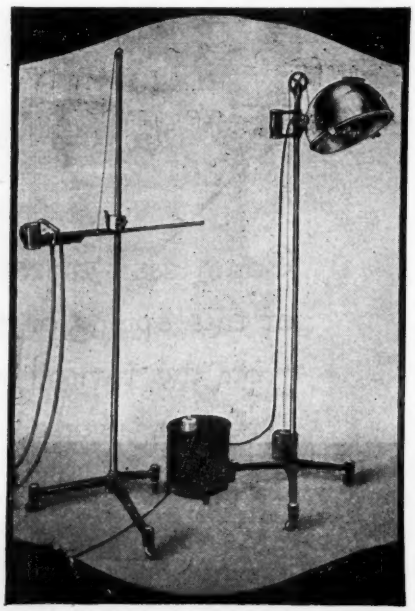

THE JOURNAL
of The
Kansas Medical Society

Vol. XXIII TOPEKA, KANSAS, MAY, 1923. No 5

Gold and Mastic Reaction.

H. A. Lindsay, M.D., Topeka.

Read at Annual Meeting of the Kansas Medical Society, Topeka, May 3 and 4, 1922.

INTRODUCTION

The tests made in this work were performed in order to determine whether there was any relationship between the two colloidal reactions in certain syphilitic spinal fluids. The cell counts, Colloidal Gold, Colloidal Mastic and Globulin tests were carried out at the Topeka State Hospital and the reagents were also made in the same institution.

The Wassermanns on the blood and spinal fluid were made in the State Board of Health Laboratory at Washburn College, Topeka.

The value of Lange's Colloidal Gold Test, introduced in 1912, is well established and needs no comment here.

The original Mastic Test has been modified many times and has proven a valuable one in many ways, but as far as we have been able to determine it has not been developed to a usable degree as a true comparative agent.

Our modification of the test approaches nearer to a dependable comparative reagent than any other which has been brought to our attention.

"Colloid solutions are of two kinds, emulsoids and suspensoids and according to their chemical composition belong in the amino-acid group."*

It is not practical to here discuss the various conditions which tend to cause precipitation of these substances, but the reaction may be explained satisfactorily on the theory that the dissolved part of the colloid is due to the fact that it carries an electrical charge which when removed by contact with another substance causes aggregation.

The value of the mastic test seems therefore to depend upon something in the spinal fluid which liberates the colloid material held in suspension, thus causing aggregation.

The practical value of the test lies in the fact that it is easily and quickly made and also in its evident constant response in a limited class of spinal fluids.

The gold test on the other hand, while very responsive and having a wider range of applicability, is difficult to make except at the hand of an expert.

FORMULAE

It will be seen from the following that the method of making the Mastic Solution and Emulsion is very simple and the technic used is identical with the gold sol. test.

Solution Gum Mastic.

This is made after the original method of cutting:

Gum mastic in clear tears	gms.	10.00
Absolute alcohol	c. c.	100.00

The solution is made by occasional agitation during several days, filtering and re-filtering until the filtrate is clear. Result, a clear, amber colored fluid. To be kept in small amber colored glass stoppered bottles of small size.

Emulsion Mastic.

Solution gum mastic	c. c.	1.00
Absolute alcohol	c. c.	9.00
Triple distilled water	c. c.	40.00

The solution of the gum mastic is added to the alcohol, and then the water is quickly added while agitating. This emulsion should be freshly made before using.

Alkaline-saline Solution.

Sodium chlorid C. P.	gms.	1.25
Triple distilled water q. s.	c. c.	100.00

To 99 c. c. of this solution is added 1 c. c. of the following:

Potassium carbonate C. P.	gms.	0.50
Triple distilled water q. s.	c. c.	100.00

*Cole: Practical Physiological Chemistry, 1920 ed.

Technic of Mastic Test.

Ten Wassermann tubes are placed in a suitable rack in the same manner as for the gold test.

The tubes should have been previously cleaned and sterilized the same as for the gold test, i. e. boiled, washed with soap and water and placed in a solution of pot. bichromate in sulphuric acid for at least one-half hour, washed with plain water, rinsed with alcohol, then distilled water, and finally with triple distilled water which has been prepared in a glass still. The tubes are then dried in a drying oven.

1.5 c. c. of alkaline-saline solution is then placed in the first tube and 1 c. c. of the same solution is placed in each of the other nine tubes.

0.5 c. c. spinal fluid to be examined is added to the first tube by means of a suitable pipette.

1 c. c. of this is added, after mixing, to the second tube, and so on to the ninth tube.

1 c. c. from the ninth tube is discarded, leaving the tenth tube undisturbed.

10 c. c. of mastic emulsion is added to 40 c.c. of saline solution and 5 c. c. of this is placed in each of the ten tubes.

The last tube is used as a check on the other tubes.

The result is read in 12 to 24 hours.

Interpretation.

Full precipitate clear is read 5.
½ precipitate is read 4.
1-3 precipitate is read 3.
Very slight precipitate is read 2.
Loss of opalescence is read 1.
No loss of opalescence is read 0.

NOTES ON TABLES.

One hundred readings of spinal fluids were made in one hundred cases.

Table 1 shows readings in thirty-five different fluids of paretics without treatment. All, or 100 per cent, show fairly uniform reaction curves in both gold and mastic tests. There is also a high cell count, positive globulin, positive spinal fluid Wassermann and positive blood Wassermann in each case.

Table 2 shows readings in eighteen different fluids of paretics without treatment. The mastic curves are fairly characteristic. In each case there was a high cell count, positive globuline, positive spinal fluid Wassermann and positive blood Wassermann, 100 per cent positive.
gold test was not made in these cases, but the

Table 3 shows eight cases of paresis after treatment. The gold was not made on two of these, but the mastic was made on all. Both gold and mastic curves indicate a modification of the typical paretic curve without treatment. The cell content was diminished in each case. The globulin was diminished also and the Wassermann on blood and spinal fluid was modified.

Table 4 shows ten readings in nine cases of cerebral syphilis. Colloidal gold reactions were obtained in eight readings and colloidal mastic in ten readings. The cell content was variable, the highest being sixteen, three showing two cells, two showing one cell and three showing no cells. The globulin test was negative in six readings, doubtful in three readings and positive in one reading. The spinal fluid Wassermann was negative in seven readings, positive in two and doubtful in one. The blood Wassermann was also negative in seven readings, positive in two and doubtful in one. The treatment in these cases is unknown, but pot. iodide was given in one case.

Table 5 shows two cases of encephalitis after the disease had been in progress for some time. Both cases gave a negative gold and mastic reaction, negative cells, negative globulin and negative Wassermann on both spinal fluid and blood.

Table 6 shows twenty-seven cases of gold and mastic reactions in various nervous and mental diseases. A case of uremia gave negative results throughout. Three cases of dementia praecox, katatonic type, gave negative readings throughout except that one had a positive blood Wassermann. Five cases of dementia praecox, paranoid type, gave negative results throughout except one which showed 12 cells, another a positive spinal fluid Wassermann with a doubtful blood Wassermann. One case of paranoid condition showed negative results throughout. One case of manic depressive, alternating type, was negative throughout. Two cases of manic

depressive, depressed type, was negative throughout, except a gold reaction as follows: 0000004332. One case of manic depressive, manic type, was negative throughout except that it showed ten cells. One case of involution melancholia was negative throughout except a positive blood Wassermann. One case of brain tumor was negative throughout, and ten cases of epilepsy were also negative throughout.

TABLE 1—GOLD AND MASTIC—PARETIC CURVE

Case No.	Diagnosis	Gold Sol.	Mastic	Cells	Glob.	Sp. Fl. Wass.	Bld. Wass.	Treat.
11402	Paresis	444443000	555443000	109	4+	4+	4+	None
11326	Paresis	555540000	555540000	116	4+	4+	4+	None
11326	Paresis	555554411	555540000	109	4+	4+	4+	None
11325	Paresis	555554432	555554432	69	4+	4+	4+	None
11318	Paresis	555555432	555554432	33	4+	4+	4+	None
11312	Paresis	555544443	555554332	15	4+	4+	4+	None
11286	Paresis	555555443	555555442	53	4+	4+	4+	None
11288	Paresis	444442100	443321000	22	3+	4+	4+	None
11290	Paresis	555554300	555543200	51	4+	4+	4+	None
11261	Paresis	444333300	433000000	26	4+	4+	4+	None
11268	Paresis	555554322	555400000	14	4+	4+	4+	None
10880	Paresis	555553300	555555432	16	4+	4+	4+	None
11214	Paresis	555540000	555555431	34	4+	4+	4+	None
11148	Paresis	555555411	555543200	35	4+	4+	4+	None
9862	Paresis	555543300	555554431	74	4+	4+	4+	None
11164	Paresis	555432100	555555432	23	4+	4+	4+	None
11061	Paresis	555544432	554322211	19	4+	4+	4+	None
11129	Paresis	555554430	555543211	36	4+	4+	4+	None
11135	Paresis	555543210	555542100	56	4+	4+	4+	None
11137	Paresis	555543200	555543220	11	4+	4+	4+	None
11260	Paresis	555543200	555554310	12	4+	4+	4+	None
11211	Paresis	555553200	555555442	46	4+	4+	4+	None
11162	Paresis	555555543	554444300	96	4+	4+	4+	None
11098	Paresis	555554442	555543332	35	4+	3+	4+	None
9849	Paresis	555554320	555555442	127	4+	4+	4+	None
11137	Paresis	554444320	555432210	40	4+	4+	4+	None
11394	Paresis	555542100	555510000	58	4+	4+	4+	None
11363	Paresis	555543210	555554200	70	4+	4+	4+	None
11103	Paresis	555543200	555442000	14	4+	4+	4+	None
11105	Paresis	555544321	555555555	13	4+	4+	4+	None
H	Paresis	555555420	555555300	302	4+	4+	4+	None
11086	Paresis	555553300	555554321	15	4+	4+	4+	None
11417	Paresis	555543200	555444200	4	4+	4+	4+	None
11422	Paresis	555543300	555554400	49	4+	4+	4+	None
11429	Paresis	333332100	443100000	20	4+	4+	4+	None

TABLE 2—MASTIC CURVE ONLY—PARESIS

Case No.	Diagnosis	Gold. Sol.	Mastic	Cells	Glob.	Sp. Fl. Wass.	Bld. Wass.	Treat.
11222	Paresis	Test not made	555555432	8	4+	Pos.	Pos.	None
10136	Paresis	Test not made	555443210	24	4+	Pos.	Pos.	None
11007	Paresis	Test not made	555433200	8	4+	Pos.	Pos.	None
C	Paresis	Test not made	444000000	37	3+	Pos.	Pos.	None
11085	Paresis	Test not made	554300000	24	4+	Pos.	Pos.	None
11052	Paresis	Test not made	554320000	13	4+	Pos.	Pos.	None
11075	Paresis	Test not made	555320000	108	3+	Pos.	Pos.	None
P62	Paresis	Test not made	555443000	34	4+	Pos.	Pos.	None
S64	Paresis	Test not made	222000000	33	4+	Pos.	Pos.	None
10927	Paresis	Test not made	554320000	10	4+	Pos.	Pos.	None
10900	Paresis	Test not made	554322000	20	4+	Pos.	Pos.	None
10917	Paresis	Test not made	555432000	27	4+	Pos.	Pos.	None
10680	Paresis	Test not made	443200000	73	3+	Pos.	Pos.	None
11007	Paresis	Test not made	555432000	57	4+	Pos.	Pos.	None
10937	Paresis	Test not made	555554000	134	4+	Pos.	Pos.	None
11350	Paresis	Test not made	555320000	137	4+	Pos.	Pos.	None
32	Paresis	Test not made	321000000	8	3+	Pos.	Pos.	None
11001	Paresis	Test not made	555400000	67	2+	Pos.	Pos.	None

18 Cases.

TABLE 3—GOLD AND MASTIC—PARESIS. AFTER TREATMENT

Case No.	Diagnosis	Gold Sol.	Mastic	Cells	Glob.	Sp. Fl. Wass.	Bld. Wass.	Treat.
11306	Paresis	111110000	444320000	7	2	Pos.	Dtfl.	Unknown
10716	Paresis	444400000	111000000	7	1	Pos.	Dtfl.	Unknown
11156	Paresis	123432000	023432110	17	3	Pos.	Pos.	Unknown
10892	Paresis		320000000	6	1	Pos.	Pos.	Unknown
10609	Paresis		555300000	46	1	Pos.	Neg.	Unknown
11268	Paresis	555532200	555443200	17	3			8S & 10M
11312	Paresis	112221000	440000000	2	2			8S & 10M
11068	Paresis	000432200	443000000	2	2			18S & 18M

TABLE 4—GOLD AND MASTIC—CEREBRAL SYPHILIS

Case No.	Diagnosis	Gold Sol.	Mastic	Cells	Glob.	Sp. Fl. Wass.	Bld. Wass.	Treat.
S. Y.	Cer. Syph.	001221100	000000000	0	Neg.	Neg.	Neg.	Unknown
11338	Cer. Syph.	000445444	410000000	1	Neg.	Neg.	Neg.	K. I.
11338	Cer. Syph.	004444444	410000000	2	Neg.	Neg.	Neg.	K. I.
11128	Cer. Syph.	233200000	145543110	16	4	Pos.	Pos.	Unknown
X	Cer. Syph.	112221000	442000000	15	2	Pos.	Pos.	Unknown
M. S.	Hered. Syph	000145544	100000000	1	Neg.	Dtfl.	Neg.	Unknown
F. L.	Hered. Syph.	000444430	100000000	2	Neg.	Neg.	Dtfl.	Unknown
L. M. S.	Hemiplegia		110000000	0	2	Neg.	Neg.	Unknown
S. H.	Hemiplegia		110000000	0	2	Neg.	Neg.	Unknown
11254	Hemiplegia	000000000	343211000	2	Neg.	Neg.	Neg.	Unknown

TABLE 5—GOLD AND MASTIC—ENCEPHALITIS

Case No.	Diagnosis	Gold Sol.	Mastic	Cells	Glob.	Sp. Fl. Wass.	Bld. Wass.
M. T.	Enceph.	000000000	000000000	1	Neg.	Neg.	Neg.
X.	Enceph.		000000000	1	Neg.	Neg.	Neg.

TABLE 6—GOLD AND MASTIC—VARIOUS NERVOUS AND MENTAL DISEASES

Case	Disease	Gold. Sol.	Mastic	Cells	Glob.	Sp. Fl. Wass.	Bld. Wass.
R.	Uremia --	000000000	000000000	0	Neg.		
M. W.	Dem. P. Kat.		000000000	2	1+	Neg.	Neg.
J. G.	Dem. P. Kat.	000000000	000000000	0	1+	Neg.	Neg.
M. A.	Dem. P. Kat.	000000000	000000000	1	Neg.	Neg.	
O. M.	Dem. P. Par.	000111000	000000000	5	Neg.	Neg.	Neg.
G. W.	Dem. P. Par.	000000000	000000000	3	Neg.	Neg.	Neg.
H. L. H.	Dem. P. Par.	000000000	000000000	5	Neg.	Pos.	Dtfl.
C. F.	Dem. P. Par.	000000000	000000000	12	Neg.	Neg.	Neg.
A. K.	Dem. P. Par.	000000000	000000000	1	Neg.	Neg.	Neg.
J. D.	Par. Cond.		000000000	1	Neg.	Neg.	Neg.
H. E.	Dem. P. Heb.	000000000	000000000	2	Neg.	Neg.	Neg.
I. V.	Man. D. Alt.	000000000	000000000	0	Neg.	Neg.	Neg.
F. W.	Man. D. Dep.	000000000	000000000	4	Neg.	Neg.	Neg.
J. M. C.	Man. D. Dep.	000004332	000000000	1	2+	Neg.	Neg.
A. B.	Man. D. Man.		000000000	10	Neg.	Neg.	Neg.
F. F. F.	Inv. Mel.	000000000	000000000	0	Neg.	Neg.	Pos.
K.	Brain Tum.		000000000	1	Neg.	Neg.	Neg.
L. D.	Epilepsy	000000000	000000000	0	Neg.	Neg.	Neg.
F. T.	Epilepsy		000000000	4	Neg.	Neg.	Neg.
V. A.	Epilepsy		000000000	3	Neg.	Neg.	Neg.
J. W.	Epilepsy		000000000	1	Neg.	Neg.	Neg.
F. W.	Epilepsy		000000000	0	Neg.	Neg.	Neg.
G. R.	Epilepsy		000000000	0	Neg.	Neg.	Neg.
F. T.	Epilepsy		000000000	0	Neg.	Neg.	Neg.
M. C.	Epilepsy	000000000	000000000	0	Neg.	Neg.	Neg.
L.	Epilepsy	000000000	000000000	0	2+	Neg.	Neg.
D. Mc.	Epilepsy		000000000	0	Neg.	Neg.	Neg.
27 Cases							

CONCLUSIONS

It may be noted that in known cases of general paralysis without treatment, the gold and mastic curves are both quite uniformly typical showing the relationship of mastic and gold in this particular instance.

When the mastic test was made alone in known cases of general paralysis who had no

treatment, the curves were also quite typical as indicated in Table 2.

There was a departure from the typical gold and mastic curve in cases of treated paresis in most instances, and incidentally the cell content, globulin, and Wassermann were modified.

In cerebral syphilis the mastic shows a high curve usually in the beginning as in paresis, while the gold shows a curve in the middle.

The gold and mastic tests are alike in our non-syphilitic mental and nervous diseases in showing no reaction whatever.

The mastic test is a valuable check test in connection with the gold reaction in general paralysis and in allied syphilitic brain and cord conditions.

In these conditions it is a good test to make because of its simplicity, and in connection with the other tests usually made along with the gold sol. it may take the place of the latter reagent with advantage, when used according to our modification.

I desire to express my appreciation of the co-operation and assistance of the Hospital Medical Staff whose efforts have contributed largely to the success of this work.

Credit is also due the State Board of Health Laboratory for making the Wassermann tests in all of these cases.

The Insulin Treatment of Diabetes Mellitus

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Read at the regular monthly meeting of the Shawnee County Medical Society, March 5, 1923.

In 1889 Bernhard Naunyn, the celebrated Strassburg physician, visited his colleagues Mering and Minkowsky at their clinic in Breslau. On the way to the laboratory one day he noticed a group of dogs in the court yard. Among these dogs were several whose pancreas had been removed in the course of some metabolic experiments.

The sharp eye of Naunyn noted at once a swarm of flies on the floor of the court yard. "Have you tested the urine of these dogs for sugar?" he asked. "No," they answered. "Well," said Naunyn, "do it. For where these dogs pass urine, the flies settle."

Mering and Minkowsky tested the urine for sugar and found it present in large quantities. Furthermore they found diacetic acid and acetone present in this urine and later observations showed that these dogs died in diabetic coma. Thus, the chance observation of Naunyn led to the epoch-making discovery that complete removal of the pancreas is followed by a severe, inexorably progressing and invariably fatal, diabetes.

This one conclusive experiment overturned the venerable theory of Galen, persisting from the second century, that diabetes is a weakness of the kidneys—that is, an inability to hold back water. The theory of Richard Mead that it is a disease of the liver was overthrown and Rolles idea that diabetes is a "primary and peculiar affection of the stomach," was relegated to the scrap heap.

This discovery of Mering and Minkowsky gave to the medical world an entirely new vision, since it showed that diabetes mellitus is a disease of the pancreas just as much as Bright's disease is a disease of the kidneys, or apoplexy is a disease of the brain.

Having established then, the fact that the presence of the pancreas is necessary for normal carbohydrate metabolism, the next obvious step was to study the pancreas closer from the standpoint of physiology and pathology. The next link in the chain was supplied by the discovery of Opie that in three cases of fatal diabetes mellitus, the pancreas showed extensive hyaline degeneration of the Islands of Langerhans.

Ssobolew observed independently hyaline degeneration of the islands of Langerhans in diabetes mellitus. The sensation produced in the scientific world by these observations was nearly as great as that produced by Mering and Minkowsky's discovery of pancreatic diabetes. Here we had a very definite and striking demonstration of the role played in human diabetes, not only by the pancreas, but by a specialized structure in the pancreas. Opie's observations immediately took first rank as one of the pillars of endocrine orthodoxy.

Opie's pathological observations were supported by the experimental work of MacCallum, who showed that while complete removal

of the pancrease produced a fatal diabetes in dogs, ligation of the pancreatic duct, although it caused atrophy and fibrosis of the pancreas did not destroy the islands of Langerhans and no diabetes resulted.

All investigations, however, on the pathological anatomy of the pancreas in diabetes mellitus did not agree with Opie's observations. Pathologists all over the world studied and restudied microscopic sections of diabetic pancreas, and found hyaline degeneration of the islands in only a very few cases. The publication of these results made the whole hypothesis of the insular theory of diabetes rather shaky for a time. This skepticism is reflected in the literature of those years which contain accounts of diabetes of "hepatic origin" of "adrenal origin" and of "thyroid origin." Even so great an authority as Van Noorden doubted that diabetes is necessarily a pancreatice disease.

Pathological studies of the pancreas failing to show many diseased islands, investigators then turned their attention to other changes in the pancreas and many publications upon this subject appeared. Cecil's article calling attention to interacinar fibrosis of the pancreas in diabetes, has been extensively quoted, particularly his statement that 80 per cent of diabetics show lesions in the pancreas at autopsy.

In 1914 I published a pathological study of the pancreas in 13 diabetic and 35 non-diabetic necropsies, and found the changes described by Cecil to be as common in non-diabetic as in diabetic cases. I have had no reason from autopsy experience or conversation with others since that time to alter my view in the least, that at present we have no criteria by which, except in occasional instances, a diabetic can be differentiated from a non-diabetic pancreas. Later refinements of technique might make this possible.

However, in spite of our inability to make an anatomico-pathological diagnosis of diabetes, there is every evidence of its pancreatic origin, and the evidence is steadily accumulating. Fine as our histological technique may seem to us now, it is probably very crude after all, and as long as the pathological anatomist can not tell whether a brain section is from the cerebrum of a genius or of an idiot, perhaps we should not expect too much from his examination of the pancreas.

The crucial experiment of Mering and Minkowsky proving that removal of the pancreas produces diabetes, suggested at once that human diabetes is due to a pancreatic deficiency which might be made up by supplying additional pancreas, such as the eating of raw pancreas. Such curative attempts over a period of thirty years have uniformly failed in both animals and man. Allen gave this treatment a trial under carefully controlled conditions at the Rockefeller Institute and wrote "the experiments with feeding fresh pancreas confirm the accepted view that it possesses no value in diabetic treatment."

With this failure of all attempts at specific therapy, the treatment of diabetes developed entirely along the lines of dieto-therapy and thanks to the labors of Allen and Joslin, progress has been rather rapid and satisfactory.

The announcement from Toronto however, that Banting and his co-workers had succeeded in isolating an active extract from the islands of Langerhans which was of value in diabetes mellitus, has introduced a new era in the treatment of the disease. As Allen remarks "the discovery of an effective non-toxic pancreatic extract is literally epoch-making."

Dr. F. G. Banting first conceived the idea of preparing a potent extract from the pancreas and gives an interesting account of his work in an article which he had published in 1922.

Banting wrote: "The hypothesis underlying this series of experiments was first formulated in Nov. 1920, while reading an article dealing with the relation of the isles of Langerhans to diabetes. From the passage in this article, which gives a resume of degenerative changes in the acini of the pancreas following ligation of the ducts, the idea presented itself that since the acinous, but not the islet tissue, degenerates after this operation, advantage might be taken of this fact, to prepare an active extract of islet tissue. The subsidiary hypothesis was that trypsinogen or its derivatives, was antagonistic to the in-

ternal secretion of the gland. The failures of other investigators in this much worked field were thus accounted for."

In Bantings first experiments the pancreatic ducts of a dog were ligated and after ten weeks the animal was killed and the atrophied pancreas extracted with Ringer's solution. This extract was found to lower markedly the blood sugar of a dog previously rendered diabetic by extirpation of the pancreas. Many subsequent experiments confirmed the striking effect of this extract which they named *insulin* and which they believe represents the active principle of the islands of Langerhans. Back in 1909 Ibrahim noted that there was no proteolytic ferment in the pancreas of the human fetus until after the fourth month of intrauterine life. Taking advantage of this observation Banting and his co-workers made an extract from the fetal calf pancreas of under five months development and found it did not contain pancreatic juice but did contain internal secretion. This discovery opened up a new era in the insulin therapy since it greatly simplified the method of preparation and greatly increased the available supply.

The pancreas was macerated in 95 per cent alcohol and after standing for 12 hours the fluid was filtered, evaporated to dryness, and then re-dissolved in salt solution. The solution was then injected subcutaneously into a diabetic dog with the result that the blood sugar fell from 350 mg. per 100 cc. to 80 mg. in three hours, and the urine became sugar free.

The method of preparing the insulin was further refined by Dr. Collip and a very potent soluble protein-free extract was obtained. This is the product now used clinically which has been called *Iletin* in the United States. This iletin must be administered subcutaneously since it is apparently destroyed in the digestive tract.

This preparation is standardized by injecting it into rabbits, one unit being the amount that will lower the blood sugar to 45 mg. per 100 cc. within four hours. When doses sufficient to produce this lowering of the rabbits blood sugar are given, the animal has convulsions which are however, relieved in a few minutes by a subcutaneous injection of glucose. This observation has a very important clinical bearing, since patients if given too large a dose of insulin may have convulsions, which can often be relieved by injections of glucose or adrenalin.

Careful metabolic studies indicate that one unit will take care of from one and one-half to two gms. of carbohydrate, occasionally as much as four gm. in the diet.

Insulin has been tried extensively in numerous clinics in Canada and in the United States during the past year. The reports are thus far very encouraging. A recent article by Banting summarizes his experience and that of his co-workers.

Banting states that up to the present time they have treated fifty cases of diabetes mellitus with uniformly good results. Glycosuria is abolished, ketones disappear from the urine and blood, the blood sugar is lowered and maintained at a normal level, the alkali reserve returns to normal and the cardinal symptoms are relieved. Banting also makes the somewhat startling statement that insulin is a specific in the treatment of diabetic coma.

Through the courtesy of Toronto University and of Ely Lilly and Company we have received a limited amount of iletin which has been used in the treatment of diabetics at the Bell Memorial Hospital. While our experience has been limited to the study of ten cases, We have been convinced of its ability to abolish glycosuria, to lower the blood sugar, to clear up ketonuria and to relieve the cardinal symptoms of the disease.

We have used it in two cases of coma. The first patient died five hours after admission to the Hospital, but was moribund when the first injection was given and was pulseless when first seen.

The second patient was a young man aged 26 who went into coma on February 21, 1923 at seven a. m. He was seen on the afternoon of the same day at four p. m., quite unconscious, head thrown back, presenting typical picture of Kussmauls "air hunger," with a pulse of 140 and blood pressure 75 systolic and 55 diastolic. His blood sugar was 667 mg. per 100 cc. He was given 25 units of iletin at four p. m., at eight p. m. at midnight, and on the

following morning at four a. m. At eight a. m. he seemed partially conscious and his blood sugar had dropped from 667 to 294 mg. per 100 cc. He was given 10 units at eight a. m., eleven a. m., and at one p. m. At four p. m., twenty-four hours after the first dose of iletin and after the patient had received 130 units of iletin he was conscious, perfectly rational, talked with his family and his blood sugar was down to 170 mg. per 100 cc. He has continued to improve and we are now working out his tolerance. This is the first patient I have ever seen rescued from diabetic coma. He received no alkali, nothing but 130 units of iletin and 3000 cc. of normal saline solution by hyperdermoclysis.

Two other patients when treatment was instituted were on the verge of coma showing extreme drowsiness, symptoms of air hunger and marked ketonuria. These symptoms promptly disappeared under treatment.

Although our experience with insulin has, as I have emphasized, been limited, I feel that the results warrant at least a presentation at this meeting.

Whether this substance is as valuable in the treatment of diabetes mellitus as is thyroid extract in myxedema, remains to be seen. But surely we must admit that the discovery of any substance that will clear up hyperglycemia, glycosuria and ketonuria, and rescue a patient from coma is epoch making. We have not as yet used it on any diabetics with surgical complications, but there is every evidence that it will rob surgical diabetes of most of its terrors.

The question as to whether insulin after repeated use will raise the carbohydrate tolerance and restore the islands of Langerhans to their normal functioning state, is a pertinent one and as yet unanswered. We do not know whether it will be necessary for these patients to continue taking injections indefinitely.

We all understand how the kidney in advanced chronic nephritis with its glomeruli destroyed, can no longer secrete urine. It may not be too optimistic to hope, that the diabetic pancreas with its intact islands, may be put at rest by this treatment so that these islands after a period of recuperation may again assume their functions and a normal carbohydrate metabolism result.

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Experiments conducted by the U. S. Bureau of Mines to determine the physiological effects of high temperatures and humidities with and without movement show that the bad effects upon man of almost saturated air with temperature from 90° to 98° are much less if the air is moving than when it is still. But from 98.6° to 100° there was no benefit observed from the air movement and if anything some disadvantage.

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The Practical Value of Blood Chemistry to the Clinician.

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Knowledge concerning the chemistry of the blood is advancing rapidly. The chemical changes taking place in the blood in health and disease are being found of constantly increasing value in diagnosis, prognosis and treatment. It may be said that the development of the micro methods of blood analysis bears as important a relation to the study of disorders of metabolism as the discovery of the causative agent of syphilis has had to the diagnosis and treatment of that disease. We are indebted primarily to American investigators, especially Folin, Van Slyke, Benedict and Myers, for methods by which the important constituents can be accurately estimated in small amounts of blood.

The biological chemist is interested in all phases of blood chemistry. The physician, however, is concerned primarily with the

practical application of blood chemical findings. Analysis of the blood and examination of the urine should go hand in hand. All substances appearing in the urine must come from the blood. Urinalysis tells only what is being excreted, blood analysis reveals what is being retained. Each gives facts which are not obtainable in any other way.

The sugar of the blood is of the greatest interest to the clinician because of the very frequent occurrence of disturbances in carbohydrate metabolism. All carbohydrates consumed by the body are utilized as glucose. The blood sugar is practically entirely in the form of glucose. The primary and essential condition in diabetes mellitus is a hyperglycemia—an increase in the level of sugar in the blood. Glycosuria is a relatively late occurrence in the course of the disease. It is apparent that an early recognition of disturbances in carbohydrate metabolism must depend upon a study of the blood sugar. The treatment of diabetes mellitus with the insulin recently introduced by Banting and Best of Toronto requires frequent observation of the blood sugar. A knowledge of the level of the sugar in the blood also enables us to differentiate the different types of glycosuria.

Normally the blood after a fast of 12-14 hours contains 70-120 milligrams of sugar per 100 c. c. of blood. When the blood sugar of a normal individual rises above 160-180 mg. sugar appears in the urine. This level in the glood above which sugar overflows into the urine is the renal threshold. The ingestion of an abnormal amount of carbohydrate or sugar may elevate the blood sugar above the threshold, producing an alimentary glycosuria. Occasionally individuals are encountered who show sugar in the urine with the blood sugar at the normal level. Such individuals have a lowered threshold due to an abnormally increased permeability of the kidney for glucose. There is no abnormality of carbohydrate assimilation. Sugar simply overflows into the urine because the kidney cannot hold it back. This condition is known as renal diabetes.

In true diabetes mellitus the glycosuria results from a hyperglycemia due to an inability of the body to burn glucose. The level at which glycosuria occurs varies greatly in different individuals. In early or mild diabetes the blood sugar ranges from 120 to 300 mg. per 100 c. c. In severe cases it may range from 300 to 600 mg. Occasionally cases are seen with a blood sugar as high as 1200 mg. Typical blood sugar findings in the various types of glycosuria are shown in Table I. As a case of diabetes progresses the kidney may become less permeable to glucose, hence a smaller amount will appear in the urine while the blood sugar remains at the same level or even higher. This is due to an elevation of the renal threshold. If such a case were judged from the urine findings alone we might consider it less severe while in fact it has become more serious. The blood sugar in diabetes may be as high as 300 mg. without any sugar appearing in the urine.

Certain patients may have a normal or only slightly elevated blood sugar and still have at times a glycosuria. The ability of such an individual to handle glucose can best be estimated from the result of a glucose tolerance test. The patient is given by mouth 1.5 grams of glucose for each kilo of body weight. The blood sugar is determined and the urine is examined at intervals of one hour for four hours. If the glucose is utilized properly there is no glycosuria, the blood sugar does not rise above 180 mgs. and returns to normal within two hours after the glucose is taken. In true diabetes the blood sugar rises to a much higher level, requires a much longer time to return to normal, and glycosuria develops. The height to which the blood sugar rises, the time required for it to return to normal and the extent of the glycosuria are some indication of the disturbance of carbohydrate metabolism. Typical curves obtained in glucose tolerance tests are shown in Table II.

A knowledge of the blood sugar level in diabetes is of especial importance in surgery. Foster[1] states that of the fatal cases of diabetes beyond the third decade 60 per cent die following operations. He has found that a patient showing a blood sugar above 350 mgs. cannot be expected to survive any serious operative procedure. The blood sugar should be lowered by dieting or by treatment

with insulin before operation. If a blood sugar is not more than twice normal a patient will usually stand operation well.

A blood sugar higher than normal may be found in conditions other than diabetes but it is seldom very high. Nephritis and hyperthyroidism may be mentioned as conditions in which a hyperglycemia may frequently be encountered.

It has long been known that an acidosis is often associated with diabetes and practically always occurs as a terminal event. Coma is due to an acidosis. Normally acids, especially carbonic acid, are formed in the course of body metabolism in large amounts. The acids combine with certain bases in the blood especially sodium. The acids are gotten rid of by the excretion of carbon dioxide in the lungs and by the elimination of certain acid salts through the kidney. In certain diseased conditions abnormal acids are formed and must be neutralized by bases. The store of bases available for such a purpose is known as the alkali reserve. Since carbonate is the principal substance which absorbs acid in the blood, the best index of the body to withstand acids is the amount of carbonates in the blood. The determination is very simply done by the method of Van Slyke. Sulphuric acid is added to a measured amount of blood plasma. From the amount of carbon dioxide given off the alkali in combination with it may be calculated. Normally in adults the alkali in 100 c. c. of blood plasma can combine 50-75 c. c. of CO_2. In children the normal figures are about 10 c. c. lower. This is known as the CO_2 combining power of the blood plasma. A decrease in the alkali of the blood is indicated by a diminution in the CO_2 combining power. This decrease may be due to an increased formation of abnormal acids such as diacetic acid in diabetes, a retention of acid phosphates by the kidney, a loss of alkali salts through diarrhoea, or to a deficient elimination of carbonic acid by the lungs.

Acidosis in diabetes may be detected much earlier and more accurately from the CO_2 combining power of the blood plasma than from the acetone bodies in the urine. The acetone bodies in the urine are in fact a very poor index of the alkali reserve. If the CO_2 combining power of the blood plasma is less than 40 an acidosis exists and if it falls below 30 symptoms of acidosis will almost certainly develop. Foster states that no operation should be attempted in diabetes if the CO_2 combining power is below 40. Typical levels of the CO_2 combining power in various stages of acidosis are shown in Table III.

The estimation of the non-protein nitrogen of the blood is of especial interest in renal conditions. The total non-protein nitrogen constitutes about 1 per cent of the total nitrogen of the blood. Normally it consists largely of urea, uric acid and creatinine. An increase in the total non-protein nitrogen of the bool indicates either that such bodies are being formed more rapidly than the kidney can excrete them normally, or that renal function is below normal. A knowledge of the level of the three constituents mentioned gives different information concerning body metabolism or renal function.

Uric acid is soluble with the greatest difficulty, only one part dissolving in 40 parts of water. Urea is more soluble and creatinine is very soluble. The kidney concentrates uric acid 20 times, urea 80 times and creatinine 100 times. The ease with which the kidney eliminates these substances is directly proportional to their solubilities, hence the kidney can excrete creatinine with the greatest ease and the uric acid with the most difficulty. It is apparent from these facts that uric acid will be the first and creatinine the last of the nonprotein bodies to be retained when the excretory capacity of the kidney is impaired.

The non-protein nitrogen is normally 25-35 mgs. per 100 c. c. of blood. It is increased in most cases of chronic diffuse nephritis. Other kidney conditions in which there is often or typically nitrogen retention are bichloride of mercury poisoning, prostatic obstruction, pyonephritis, chronic passive congestion, polycystic kidneys, and some cases of acute glomerular nephritis. The non-protein nitrogen is also increased in toxemias such as intestinal obstruction and lobar pneumonia. Here the increase is due to increased nitrogen

destruction rather than a diminution in kidney permeability. In parenchymatous nephritis it is not increased. In chronic hypertensive vascular disease it remains normal. This fact makes the estimation of the greatest value in differentiating hypertension due to essential vascular disease from that due to primary kidney disease. Typical values for the non-protein nitrogen, urea nitrogen, uric acid and creatinine in various types of kidney and vascular conditions are given in Table IV.

Urea is entirely of endogenous origin being formed by the desamidization in the liver of amino acids set free in the digestion of proteins. The blood normally contains 10 to 15 mgs. of urea nitrogen per 100 c. c. This is equivalent to 22 to 33 milligrams of urea per 100 c. c. The urea nitrogen normally constitutes about 50 per cent of the total non-protein nitrogen. In nitrogen retention due to renal disease the increase is due principally to urea nitrogen. In such cases the urea nitrogen constitutes as high as 90 per cent of the total nitrogen. In the presence of a toxemia causing increased nitrogen destruction, a larger amount of the total non-protein nitrogen is in the undetermined form.

Uric acid is of both endogeneous and exogenous origin. It is formed from the purine bodies contained in nuclear material. The normal amount varies from 1-3 mgs. It is increased in the blood almost uniformly in gout and is thus a valuable diagnostic aid. Since in nitrogen retention due to kidney disease there is also an increase in uric acid, in order that in diagnosis significance may be placed on an increase in gout, it is necessary that kidney disease be eliminated or that the increase in uric acid be out of proportion to the increase in total non-protein nitrogen. An increase in both points to kidney retention rather than a disorder of purine metabolism.

Creatinine is entirely of endogenous origin. It is formed in muscle from creatine. Since creatinine is the body most easily excreted, an increase is undoubtedly of the most clear cut prognostic significance. The creatinine is seldom over 2.5 mgs. in conditions other than renal insufficiency. When it is as high as 5 mg. it indicates a very serious renal involvement and if the condition is chronic it will certainly be fatal. In some acute conditions the creatinine may reach 5 mg. without a fatal outcome. Chronic nephritis, on the other hand, is not uncommonly fatal without there being an increase in creatinine in the blood.

The creatinine level in chronic nephritis is not affected by diet since it is of endogenous origin. Urea, however, is so affected. This is well shown in a series of successive determinations on a patient suffering from chronic nephritis (Table V). On a low protein diet there was a marked fall in total non-protein nitrogen and urea nitrogen. The creatinine continued to rise. It is evident here that the creatinine was of infinitely greater prognostic significance than the other non-protein bodies.

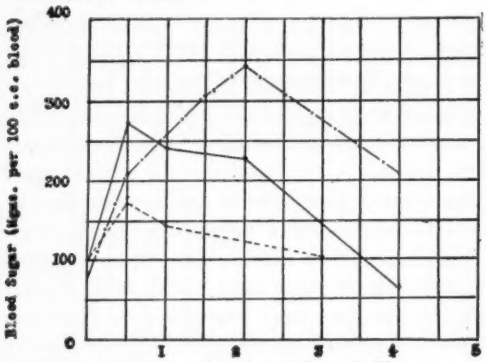
The substances which are the most practical applications are those which have been enumerated. The cholesterol, the fat, the amino acids, the chlorides, phosphates and other inorganic salts and numerous other substances are of the greatest interest to the biological chemist and investigator. And there is every reason to believe that these also will be found of increasing importance in the study and treatment of disease.

The methods of blood analysis are simple enough for any intelligent and well trained technician to carry out accurately. It is important that the blood be obtained only when the patient has taken no food for 12-14 hours previous to the test. One drop of a saturated solution of potassium oxalate must be added for each 5 c. c. of blood to prevent clotting. It is better to make the determinations as soon as possible after the blood is obtained. Sugar is destroyed quite rapidly in fresh blood. One drop of commercial formalin added to 5 c. c. of blood will preserve it satisfactorily as long as 24-48 hours.

TABLE I.—Blood Sugar Findings in Various Types of Glycosuria.

	mgs. per 100 c.c. blood
Normal	70-120
Alimentary glycosuria	150-170
Renal diabetes	70-120
Early or mild true diabetes	120-300
Severe diabetes	300-600

TABLE II.—Blood Sugar Curves after the Ingestion of 1.5 Grams of Glucose per Kilo of Body Weight.



Time in Hours after ingestion of Glucose

--------Curve of a Normal Individual.

———Curve of a Mild Diabetic.

—·—·— Curve of a Severe Diabetic.

TABLE III.—CO^2 Combining Power of the Blood Plasma in Acidosis.

	c.c. CO_2 per 100 c.c. blood plasma
Normal (adult)	50-75
Slight acidosis	40-50
Moderate acidosis	30-40
Severe acidosis	Below 30

Note: The figures for children are about 10 c.c. lower than those given for adults.

TABLE IV.—Characteristic Blood Chemical Findings in Different Types of Renal and Vascular Disease.

Condition	Total Non-protein Nitro. mg.	Urea Nitro. mg.	Creat. mg.	Uric Acid mg.
Normal	25-35	10-15	1.2	1.3
Chr. hypertensive vascular disease	35.0	16.2	1.4	2.9
Myocardial insufficiency	31.4	17.3	1.1	....
Parenchymatous nephritis	28.2	15.4	1.7	3.7
Mild chronic nephritis	45.3	33.6	....	3.2
Severe chronic nephritis	143.0	122.0	4.3	5.2
Pyelonephritis (chronic)	196.0	160.0	11.9	....
Bilateral polycystic kidney	70.5	41.1	2.8	3.8
Acute glomerular nephritis	51.8	25.0	....	5.6
Prostatic obstruction ("Back pressure kidney")	50.4	27.5	1.2	2.9
Bichloride of mercury poisoning	236.0	143.0	13.0	14.0

Note: All figures are in milligrams per 100 c. c. of blood. The results given are those actually obtained in typical cases.

TABLE V.—Chart to Show the Effect of Diet on the Blood Chemical Findings in a Case of Progressive Chronic Diffuse Nephritis.

Date	Total Non-protein Nitrogen mg.	Urea Nitrogen mg.	Creatinine mg.
May 21	217	170	13.5
May 28	221	177	....
June 4	250	177	....
June 11	189	163	15.4
June 18	186	143	18.3
June 25	140	103	16.0
July 2	136	104	16.3
July 9	104	76	17.3
July 16	114	92	20.1

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Glucose Tolerance Test.

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Read before the Kansas Medical Laboratory Association, December 14, 1922, Topeka, Kansas.

The glucose tolerance test is based on the physiological reaction of the pancreas to a known amount of sugar. In other words it is a test of pancreatic activity. From our standpoint the method or technique of the test is the most important matter. It is necessary of course in any such test as this to have the honest co-operation of the patient. The night before the test is to be made we explain the purpose of the test and instruct the patient to come to the office the following morning without having eaten anything and preferably without taking anything to drink, except perhaps a small glass of water. The patient is also warned that the procedure will necessitate his remaining in the office all morning.

A specimen of both blood and urine are obtained as soon as the patient arrives at the office. Then the glucose meal is given and the time noted exactly. The glucose meal is prepared the night before in order to save time the morning of the test; this meal consists of glucose, lemon juice and water. The composition of the glucose meal varies with the weight of the individual.

From frequently repeated tests on normal individuals the average of glucose assimilation limits has been ascertained at 1.7 gm per kilogram body weight. This is regarded as standard by physiologists.[2]

For instance a person weighing 150 pounds would receive 120 c. c. of glucose, 90 c. c. of lemon juice and water to make 400 or 500 c. c. The lemon juice is added merely to make the meal more palatable. Exactly thirty minutes after the patient receives the meal a second specimen of blood is taken. Then again at exactly one hour after the meal was given a

third specimen of blood is taken, and at this time a specimen of urine is also obtained, and the patient is asked to drink a measured amount of water, usually about 200 c. c. From this time on the blood and urine are obtained every hour for either 3 or 4 hours more and the measured amount of water is given to the patient each hour with the exception of the last one.

The urine is measured and tested qualitatively for sugar with Benedict's qualitative solution and if sugar is present the relative amount is noted, as 1, 2, 3 or 4 plus. And these facts are charted as I will illustrate later. We use Benedict's solution because of its great improvement over Fehling's solution. Owing to the substitution of sodium carbonate for sodium hydroxide the solution is not reduced by urates or creatinine. It does not give a positive reaction with the concentration of glucose normally present in urine, but is very sensitive for small increases beyond this.[2] Using Benedict's qualitative solution our standard for reading the reaction is as follows: A one plus in comparison to the control Benedict's solution is when there is a change to a greenish blue color, with sufficient opacity to prevent reading ordinary print thru the test tube due to suspended precipitate. Where there is a greenish yellow color with more marked opacity we designate it a 2 plus. A three plus is a reaction producing, not a green, but a decided yellow color with a tendency to red or copper color. A reaction producing a reddish coppor color we call a 4 plus. This classification, (when using 1 or 2 drops of urine) corresponds very closely to percentage of sugar present.

The blood is obtained by venipuncture and I usually take 5 c. c. each time and put it into a small wide-mouthed bottle with rubber stopper containing about 6 drops of 20 per cent calcium oxalate solution to prevent clotting. The amount of blood sugar is estimated on each sample of blood by the Folin Wu method.[3] This method I think is gaining wider recognition as a very efficient method for estimating blood sugar. It is not at all complicated and is probably familiar to the majority of you.

I will outline it briefly. There are only six solutions necessary.

1. 10 per cent sodium tungstate.
2. Two-thirds N sulphuric-acid.

These are used in preparing the protein free blood filtrate.

3. Alkaline, copper tartrate solution.
4. Standard sugar solution.
5. Phosphotungstic-phosphomolybdic acid.
6. Saturated solution of sodium carbonate.[3]

The standard sugar solution contains 1 mgm. of dextrose per 10 c. c. solution and I usually prepare two standards when running this test—1, using 2 c. c. of this solution and 2, using 4 c. c.—thus one is the normal or 0.10 per cent and the other twice normal or 0.20 per cent.

After the protein free blood filtrate has been prepared, 2 c. c. of each are measured into marked test tubes, 8 inch by 1 inch size graduated at 25 c. c., then 2 c. c. of the alkaline copper solution are added to each tube including the two tubes containing the standard sugar solution. These are put into a water bath of boiling water and boiled for six minutes. The sugar plus the heat thus applied effects a reduction of copper proportionate to the amount of sugar present. Immediately upon removing the tubes from the bath one c. c. of the phosphotungstic-phosphomolybdic acid is added to each tube as nearly simultaneously as possible. This dissolves the cuprous oxide. This is mixed, cooled to room temperature, and 5 c. c. of the saturated sodium carbonate solution added. An intense blue color is gradually developed which will remain unaltered for several days. However after standing five minutes, then diluting to the 25 c. c. mark the color comparison may be made immediately, and the amount of sugar calculated. This really is not a time consuming method for the seven or eight sugars can easily be run thru in 45 minutes, or an hour.

To make the facts thus obtained easily and quickly readable we chart them on graph paper which I wish to demonstrate: You will see on the right hand side a legend showing the meaning of the characters and on the extreme right you will find the amount of urine output and water intake represented by so

many c. c.'s per square. The urine output is represented by a solid black bar and water intake by the open bar. The sugar in the urine is represented by black circles under the urine output bar. The blood sugar is indicated in so many mgm per 100 c. c. blood per square on the left hand side; time is noted in hours at the top. At the bottom of the page the black lines indicate the normal limits of blood sugar after 12 hours of fasting.

The red line represents the *Blood Sugar Curve.*[4] This is really a line connecting the points representing the blood sugar estimations at the several hours.

The majority of patients upon whom test has been made were those known to have diabetes, or suspicioned of having diabetes. The first two cases here illustrated however, are controls or normals, Charts I, II and III. The features to be noticed are that they come up promptly to 0:15 per cent or 0.17 per cent and are back within the normal limits at the end of the second hour period. It is a remarkable fact that the second hour is often lower than the third or fourth hour.

Charts IV, V, XIII and XIV represent what we know as pre-diabetics or abnormal. The feature you see here is that the blood sugar curve does not come down promptly within the two hour period, but lags along to the third hour indicating a lack of glycogenesis owing to an absence of ferment from the pancreas.

Charts VI, VII, VIII, IX, X, XI and XII are of cases of undoubted diabetes of more or less severity.

I have one case to show you upon whom we have two curves. One, Chart XIII, was made before any treatment and altho the patient had a rather pronounced case of pre-diabetes, he did not take treatment but after several months of self-directed diet he returned for another test. The curve of Chart XIV clearly shows his improvement altho he still is far from normal.

In some cases here you have noticed a hyperglycemia without the demonstration of sugar in the urine. Physiologists explain the phenomena in this manner: The presence of a hyperglycemia affects the blood vessel walls in such a way as to render the cells of the glomerulus and tubules less pervious to sugar. In other words the threshold point for sugar has been raised by the prolonged presence of an excess of sugar in the blood.

I have two other charts that I think are interesting. Chart XV is a case of endocrine disorder in which Dr. Menninger suspected that there might be a high glucose tolerance; there being other evidence of hypopituitarism. You will see this is well shown by the curve.

Chart XVI represents a case in which we found one plus sugar in the urine with a blood sugar of 0.14 per cent. Since the blood specimen had been taken about 10 o'clock in the morning, three hours after the average breakfast time, a low glucose tolerance with possibility of diabetes was suspected. A glucose curve was made and found to be normal. Upon further questioning the patient we discovered he had had breakfast only a short time before coming to the office on that particular morning.

Dr. Karl Menninger believes that the appearance of sugar in the urine in many neurotics is explicable on the basis of psychogenic mobilization per adrenal stimulation. It is well known, of course, that glycosuria is found in many college students during and after final examinations.

In conclusion, it seems to me that as laboratory workers we may say to the clinician who has a case of diabetes, or suspected diabetes: Here is a case in which a glucose tolerance test would be of definite value to you. The glucose tolerance curve will give you a clear conception of the severity of the case. It may show the patient to be a pre-diabetic—a stage of sugar intolerance that can be successfully treated.

In cases of true diabetes the glucose tolerance curve performed at intervals during the course of the treatment, is an indication of the rate of the return of pancreas activity, thus the physician may know when or how nearly this activity has returned to the normal. More of these studies need to be made to establish definite limits for the four types of curves that are indicated by this series,

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(See Dermatology and Syphilis)

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(See Materia Medica and Therapeutics)

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(Department Continued Next Month)

the sub-normal, normal, pre-diabetic and diabetic.

The sub-normals, which are probably due to endocrine disorders surely merit further study in this field to increase the value of this test as an aid in diagnosis. Results of our investigations as well as of others would indicate that the glucose tolerance test undoubtedly reveals an important number of cases of early or latent diabetes in which dietary regulation is the indicated procedure for it seems probable that many cases of diabetes may be prevented by diet instituted on the basis of glucose tolerance test in this pre-diabetic stage.

Foot Notes.

1. Olmstead, W. H. and Gay, L. P.—Arch. Int. Med. March, 1922.
2. Cole—Practical Physiological Chem. 5th Edition, pg. 309.
3. Folin, Dr. Otto—Laboratory Manual of Biological Chem. Pages 197-9.
4. This color can not be shown here, but we use it in the original charts.

Syphiloma of the Rib—Review of the Literature and Report of a Case

FERDINAND C. HELWIG, M.D., Halstead, Kan.

Bone syphilis is as old as the disease itself and periostitis with osteitis is as old as bone syphilis. As Power has aptly expressed it, the term "node" to denote localized luetic periostitis is now relegated to folklore. So we see that we are dealing with a condition of sufficient antiquity that it's possibility must be considered at least in differential diagnosis, in spite of the gratifying scarcity of bone lues brought out by the brilliant researches of Ehrlich and Wassermann. Too much confidence in the Wassermann reaction has in fact become a stumbling block of no mean proportions in tertiary lues, due to the relative percentage of negatives found in this stage. The time worn platitude once uttered by Osler and at present so extensively plagiarized that it has almost become a household expression: "Know syphilis in all of its manifestations and all other things clinical will be added unto you," is none the less true for it's appalling triteness.

The paucity of literature upon syphilitic involvement of the ribs may be due to the attitude taken by observers that it is unimportant or else the cases may have been included among those published wtih multiple gummatous lesions. A very careful review of the literature has revealed but seven published cases. Mention of tertiary rib syphilis is not included in the standard texts. My deductions are that it is relatively uncommon. Ware mentions the appearance of nodes on the head, sternum and ribs, which he considers the analogue of adenopathy, being transitory in nature and having nothing whatever to do with the later tertiary formations. Reidel makes the assertion that the ribs are subject to infection from acute osteomyelitis, typhus and also from actinomycosis and lues. Gue states that an affection of the chest, vertebrae and ribs in the gummatous period occurs in 2.6 per cent of cases among men and 4.5 per cent among women. Porfiriev mentions that he saw fourteen cases of syphilitic periostitis of the ribs during seven years work in the syphilis clinic of Kazan University. There were no cases of primary gummatous osteitis or primary chondritis of the cartilages.

The following is a report of all the available cases:

Porfiriev. Case 1.—Man, age 32, admitted to the Psychiatric Hospital, in Kazan in a condition of acute delirium. Past history and venereal history negative. About a week prior to admission his first symptoms of illness were observed. He ran a more or less typical course of dementia paralytica while in the hospital, with the additional development of a large carbuncle on his neck and multiple furuncles on his mouth, cheeks and arms. About a month after admission a mobility was noted in the region of the 5th and 6th ribs at the place of junction of the cartilage and bone. A thorough examination revealed no signs of violence. The patient became unconscious and died in about ten days. Diagnosis of dementia paralytica with diastasis at the junction of the manubrii sterni and corpus sterni, diastasis between the third, fourth and fifth cartilages of the left ribs and ribs, also a thickening at the junction of the eighth cartilage of the rib and rib. Partial autopsy was admitted and microscopic examination showed it to be a clear cut case of gummatous chon-

dritis and gummatous osteitis of the ribs and sternum.

Legrain. Case 2.—Man, age 20, with gumma of the ribs and pleural fistulas, likewise affection of the breast bone. This was a case of hereditary syphilis. A month of specific treatment resulted in some improvement; then hemorrhages appeared and the patient died. The nature of the malady was proven histologically.

Koller. Case 3.—(Cited by Porfiriev). This case was demonstrated before the Dermatological Society of Berlin. The patient, age and sex not given, noticed two years after infection painful swellings of various sizes on the chest. They were covered with unchanged skin. Syphilis was diagnosed after some hesitancy and was proven after specific therapy.

Coutt. Case 4, 5.—He tells of two cousins who had hereditary syphilis in the same form, namely: simultaneous gummata of the ribs and sternum. In one the symptoms appeared at twenty-five, in the other at twenty-eight years of age.

MacLachlan. Case 6.—Man, age 49, two years prior to examination he had suffered from a large indurated mass in the region of the sternum where two perforations subsequently appeared. He was treated with blue ointment and potassium iodide, a raw surface was still present at the time of demonstration.

Forster. Case 7.—Girl, age not given, came into the hospital with a large gumma of the back which was treated with potassium iodide and improved remarkably. A year later she was admitted again suffering this time with a large node on one of her ribs on the right side and a severe syphilitic synovitis. The condition cleared up under the administration of potassium iodide.

Helwig. Case 8.—Man, age 39, came into the clinic complaining of a painful tumor on his right breast, which had been diagnosed sarcoma, inoperable in nature and to which the unhappy prognosis had been given which is usually coincident with such pathology. Four months prior to admission he had suffered an injury to his right jaw which was followed by painful swelling, hard in consistency and about the size of a walnut. This was lanced and the bone curretted by a surgeon and healed very slowly. About six weeks ago the sinus which had formerly healed broke open and drained. It had been draining ever since. About a month ago he noticed a lump on his right breast, while he thought followed a blow he had received some days previously. He said the swelling was only painful at night but the pain was then so intense that he was able to get but very little sleep.

Examination—There was a scar at the angle of the right jaw which was markedly indented and contained a small sinus in the center of the indentation. It drained a yellowish serous fluid. There was a tumor mass about as big as a medium sized apple between the second and fifth ribs just to the right of the sternum and it shaded off into the area of the sternum. On palpation it felt hard about the periphery but was softer in the center of the mass at the apex. It shaded off indefinitely in all directions. The skin was freely movable over it. Otherwise examination proved to be essentially negative. A radiograph of the right chest showed some irregularity of the periosteal contour for about two inches to the right of the sternum on the fourth rib. The same rib showed increased density of the shadow especially at the junction of the rib with the cartilage. For a short distance to the right of the cartilage there was some osteoporosis. The cartilage of the fourth rib seemed to be swollen and the shadow was noticeably less clear than on the other ribs. The sternum was apparently free from involvement.

Treatment.—He was placed on potassium iodide and given mercury rubs, with instructions to return in two weeks for examination. Upon his return two weeks later he stated that upon the second day following the use of his medicine, he had experienced his first nights real sleep, free from pain, in over a month. The osteocopic pains had now disappeared entirely and the tumor was at most but half it's original size.

The patient appeared again a month after his first examination and the tumor had entirely disappeared. The sinus on his jaw

had ceased draining and had healed completely. We continued him on potassium iodide and have since not heard from him.

Diagnosis.—Luetic periostitis and osteitis of the fourth rib (right) and possibly luetic chondritis of the fourth rib cartilage.

Discussion.—A tumor following closely upon an injury, painful only at night and of suspicious central consistency, immediately suggested other possibilities aside from sarcoma. The draining sinus on his jaw looked like a luetic process and the history of the jaw condition was highly suggestive. The x-ray plate rather ruled against sarcoma, since we think of sarcoma as growing from one side of the bone, while syphilis notoriously involves it's entire thickness. However complete satisfaction was experienced when, after two weeks specific treatment, we found the "Therapeutic Test" to be so strongly positive. Unfortunately the cases herein reported have failed in a large measure to deal with symptoms, signs, pathology or treatment. They were in fact very brief descriptions and have been incorporated more or less in detail in this paper. A long discussion of the pathology of bone syphilis is uncalled for. Porfiriev has elaborated this phase of the condition quite generously but his findings are merely those of bone syphilis elsewhere. The x-ray picture produced in our case is easily explained by a comprehensive understanding of the pathology.

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Fable for the Kansas Doctor

By Rennig Ade

Once there was a Kansas Doctor who in a moment of incautiousness was stung and severely poisoned by the radio bug. This bug has been described by bacteriologists as an ubiquitous coccus about the size of a Ford casing—habitat, the empty place in a doctor's head—habits, persistent—toxins, cumulative—treatment, futile.

The Doctor had read of the radio in his daily papers and magazines, and had even heard a Chautauqua lecturer explain it. In his own mind, however, he had listed it as a thing apart not liable to enter into his own life—a pleasure for his city colleagues who would enjoy it alongeside their league baseball games and midnight suburban chicken dinners.

It never occurred to him that the time would come when he would dash over the prairies in his tin lizzie, a copper wire around his perfect 42, his ears covered by a receiving set, his tiny aerial sticking jauntily out in front, with one ear listening for the lusty howl of the expected arrival four miles away, and with the other getting a quotation from his home banker as to the financial responsibility of the new clientele.

Seeing his friends one by one and then by droves succumb to the radio craze, he studiously avoided them, and refused many invitations to "listen in."

However, the time came when to avoid appearing rudely discourteous he had to at last accede to the repeated wishes of a good neighbor, and in company with Friend Wife dropped in for a seance.

We call it "seance" because of its resemblance to a spiritualistic rapfest. All equip themselves with ear-muffs and clamps three sizes too small, sit in a circle, and try to register intelligence and polite interest.

The neighbor, a courteous individual whom no one wishes to offend, now begins to twist

indicators, screws and valves. The listeners are rewarded by an occasional scratch or whistle, but otherwise the thing maintains the silence of the tomb. The neighbor volunteers excuses as he works, mentioning "static," transformer," "wave-length," etc., with a familiarity that betokens inside information.

At the end of an hour a gleam of hope suddenly lights up the neighbor's countenance. The listeners-in divine that he has had a nibble. But nothing in the torturing headlock over their ears has apprised them of the fact.

A few more turns of the gleaming dials, and a faint feminine squeak—seemingly from the Cataline Islands, and from the depths of a glass-bottomed boat—announces "And for Bonnie Annie Laurie I would lay me doon and—s-c-r-a-t-c-h, squawk, g-r-r-r, whistle—and dee." This was encouraging, but our neighbor lost contact or control of something just then, and Bonnie Annie departed with an eldrich shriek which nearly lifted the Doctor out of his chair.

A half hour later the sustained silence was broken by the sudden announcement by the Palmer School of Chiropractors, Davenport, Iowa, that "Mr. Blgzwrqb will now sing Rocked In the Cradle of—sc-r-r-atch—whistle—squeak—Sweeny Automobile School, Kansas City, M—sc-r-ratch—squeak—howl—located at Fort Worth, Texas."

The neighbor was getting away better, and was pleased. The Doctor was getting dizzy. He longed for a stabilized point on which to focus his auditory apparatus. He felt relieved when Anthony, Kansas, came in with that late musical hit "A Hot Time In the Old Town" played on a graphophone. The second selection, "After the Ball," was good except the operator forgot to change needles. Naturally this was fussy, and incidentally the scratches and whistles got busy on the third verse, and the neighbor fled from this with a vicious twist of his steering gear.

He landed kerspat on a lady who was decanting in a pure sweet voice about the devilishness of Peter Rabbit. She had just reported Peter cornered in the cabbage patch, and Mr. McGregor coming with fire in his eye. The Doctor's wife, who is naturally very sympathetic, flopped her hands and cried "Shoo!" thinking to tip Peter the information that Mr. McGregor was in the offing. Naturally taking the opposite side, the Doctor yelled out "He's hiding in the sprinkling pot, Mac!" A wailing, scratching, whistling pandemonium now broke in, and they judged McGregor was beating out Peter's brains with a carrot.

Just then Miss Jones from St. Louis announced firmly that "That will be all for tonight." Evidently she thought McGregor was going too strong on Peter.

The neighbor was much delighted with the Doctor's enthusiasm, and tried to give them all he had. He switched a little doodad, and a lady soprano from Glendale, Cal.—the home of the endocrine products—sang in a deep bass voice, "Ain't It a Grand an' Glorious Feelin'". This was followed by an organ solo, "Te Deum Epididymus," by Harrower.

Again they were switched to Davenport, where they heard one of the patients singing "Adjust and Generous God Will Bless." The slamming of a door in the garage threw them off onto the University of Wisconsin Agricultural Department, from where Dr. Cereal was delivering a lecture on the care of chinch bugs during the mating season. The neighbor again worked the levers, and somebody somewhere "signed off" saying, "It is exactly 9:30 day before yesterday—goodnight." Miss Jones quietly slipped Iowa two feet of snow while the orchestra was resting, and then bragged about it.

The Doctor was now in a mood to believe anything, and it is probable it was at this time the bug gigged him. Anyway, he left his friend's home a changed creature. He knew well that the children needed clothes, and that the house needed painting, and that the taxes should be paid, and provision made for an ice-book a month later. But to all this he turned a deaf ear. In years gone by he had craved respectively the graphophone, the automobile, and the player-piano, and had in some manner made out to gratify these cravings. But never in his most fitful moments of longing had he experienced anything like the abandoned craze that now obsessed him.

He cautiously and timidly voiced his feelings, and immediately learned to his aston-

ishment that three implement men, two barbers, one harness maker, ten automobile dealers, and numerous bootleggers without definite place of business, were agents for as many different makes of radio outfits, each superior in every way to the others. He very quickly made a selection from the smoothest talker, and instructed him to install it immediately, "ground wire and all," making it clear to the radio agent that he has no time to bother grinding wires for a radio outfit. This he opined would impress the salesman not only with his rush of business affairs, but with his knowledge of the game, and thus guard against any attempt to put anything over on him.

The Doctor now has his radio running full blast, and it certainly is a pleasure to sit back in his easy chair and get every word more or less distinct from the Peter Rabbit Lady and the Palmert School of Chiropractors, Davenport, Iowa.

Moral—"Where there's a will there's a way."

———By———

BELL MEMORIAL HOSPITAL CLINICS

From the Surgical Clinic of Mervin T. Sudler, M. D.

THE USE OF LAXATIVES AND CATHARTICS IN SURGICAL CONDITIONS

"*Violent abdominal pain unattended by diarrhea contraindicates the administration of a purge.*"—Fantus.

CASE HISTORIES

1. *Acute appendicitis.*— Hospital No. 13.000.

The patient we are considering today is a young farmer twenty years old. He was seized with pain in the epigastrium while working. The pain became progressively worse and he was nauseated and vomited once. Late in the afternoon he visited his physician *who prescribed two ounces of castor oil, after which he vomited a number of times, and the pain became much worse and he was very uncomfortable until 2:00 a. m. when he fell asleep.* In the morning his bowels moved but this gave him no relief. He entered the hospital yesterday evening, four days after the initial attack. A tender mass could be palpated in his right side. His pulse was 78, temperature 99.2°, leucocytes 12,400. Now we find his appendix is embedded in the omentum and a small amount of free pus appears when the adhesions are separated. (The appendix was removed and drainage inserted.)

2. *Intestinal obstruction*—Hospital No. 11680.

Complete obstruction of small intestine by a fecolith two to three feet above the ileo-colonic valve. About sixty hours before operation the patient was suddenly siezed with pain and cramps in her abdomen.

She then took a dose of salts (magnesium sulphate). *This was rapidly followed by nausea, vomiting and more pain.* She then called her physician, who found her temperature subnormal, her pulse 84 and a leucocyte count of 18,000. He tried enemas without result. A diagnosis of intestinal obstruction was made but operation was refused. It was then about 9:00 p. m. She was given one quarter of a grain of morphine hypodermatically and nothing by mouth. Next morning her distention, discomfort, pulse and nausea were all increased and she was then removed to the hospital. By that time her pulse was 104 and her appearance was that of a very sick woman. She was operated upon immediately and the fecolith removed. The next day her pulse was 140 and while she finally recovered the outcome was doubtful for 48 hours.

The patient suffering from appendicitis was made very much more uncomfortable by the administration of oil. All of the symptoms were exaggerated and in spite of the fact that the inflammation of the intestine was not sufficient to paralyze it completely and that part of the oil was retained and finally caused a movement of the bowels, it gave him no relief. From his own story it was evidently harmful.

In the patient suffering from obstruction, the laxative and the stomach fluids in addition were vomited and added to the discomfort and severity of the symptoms.

There is no class of drugs used so indiscriminately and so thoroughly abused as the laxatives and cathartics. Their misuse extends from the miscellaneous dosing at home to their thoughtless use by physicians. There

are all sorts of patent and proprietary preparations, whose action is of this character, sold under various names in all the drug stores. To those of you who would read a short and very sane presentation on this subject I would recommend the small publication composed of a series of articles appearing in the Journal of the A. M. A. by Bernard Fantus and published separately under the title of "Useful Cathartics." I quote a portion of the author's brief preface.

> "When physicians no longer prescribe physic whether the patient needs it or not, when doctors cure and never cause the cathartic habit, when patients who require an evacuant are fitted carefully, skillfully and artistically with the very agent best suited for them, when medical students are taught therapeutics with sufficient thoroughness to enable them to prescribe the proper purge with intelligence and efficiency, when books on pharmacology and therapeutics adequately deal with the use of medicine—then, a publication like the present little book will no longer be required."

However, the phase of the subject that I wish to emphasize today is the use of cathartics in the presence of surgical abdominal conditions and in the preparation of patients for surgical operations.

The average person is often much concerned whether the bowels move or not regardless of the state of their health or feelings. We should remember that persons suffering from ordinary constipation may have a bowel movement only once in seven days, or even much longer and attend to their customary occupations. A condition of acute constipation *without obstruction*, causing death, is impossible. Even the impaction occuring in opium addicts does not cause alarming symptoms. When there is definite obstruction, whether this is caused by mechanical means or by the paralysis of inflammatory conditions it is impossible for a cathartic to cause a movement of the bowels.

Let us review very briefly some of the possible symptoms resulting from constipation ***without obstruction or paralysis.*** They are a coated tongue, headaches, slow pulse with low blood pressure, malaise, poor appetite, clammy and muddy skin.

The result of obstruction, no matter to what it is due, is much more serious and striking. First and most important, pain, exaggerated peristalsis, nausea, vomiting, elevation of pulse, reverse peristalsis, intense toxic symptoms caused by the rapid proteid destruction, the decrease of the sodium chloride of the blood and urine, as shown by the researches of Haden and Orr, the higher the point in the intestine obstructed the more rapid these changes occur.

When a cathartic is given under such conditions the upper portion of the intestine is stimulated—pain is increased. Reverse peristalsis soon occurs and to quote Harris, "The surgeon listens to the tale of the patient or nurse (or alas! at times of the attending physician) of the repeated doses of castor oil, of calomel or of salts of magnesia *ad nauseam* which have been poured down the poor patient's throat only to be promptly returned with interest." The formation of the toxic materials is hastened and the condition rapidly becomes alarming. A cathartic under such circumstances will *never* cause a movement of the bowels, and where the obstruction is due to intussusception it will only serve to increase the pathology so all purgative medication is absolutely contraindicated. In fact with a diagnosis of obstruction made all treatment is directed toward preventing peristalsis until the cause itself can be removed. A great many years ago Alonzo Clark advocated giving morphine until the respirations were slowed to twelve a minute in patients suffering from peritonitis and obstruction. This method was used extensively and its success depended upon the reduction of peristalsis to the minimum.

The rapid absorption of this toxic material in the distal portion of the intestine after a mechanical obstruction has been relieved may lead to alarming and fatal results. It has been suggested that from two to three ounces of a saturated solution of magnesium sulphate be injected into the intestine through a fine hypodermic needle in order to increase the osmotic pressure inside of the intestine

and to hasten the elimination of this material. This method we used in the case cited. However, the most efficient method discovered so far is that of Haden and Orr, using large quantities of three to five per cent solution of sodium chloride under the skin.

The reverse peristalsis and faecal vomiting must be treated by the prompt removal of any accumulation in the stomach with lavage.

In the preparation of patients for a surgical operation drastic catharsis is no longer used. An athlete would not think of taking a large dose of calomel and salts as a preparation for a football game or other test of strength and endurance. Neither should our patients be handicapped in the same way. In abdominal operations it is desirable to have the intestines empty and this should be accomplished in the gentlest manner possible. The most efficient measure is the soapsuds enema properly given, combined with limited diet the day before, though a moderate dose of castor oil or cascara does no harm. In operations on other parts of the body no cathartic or laxative is needed, unless there is some unusual indication referable to the bowels. After operations we rely upon the treatment of symptoms as they arise. Gentleness in handling the intestines, a limited exposure to the air and iodine fumes prevent and limit the amount of gas pains. For gas pains we use heat and usually a gas enema containing turpentine as the active ingredient. Calomel is never used. We do not use a laxative by mouth until the third day, when a moderate dose of cascara is given, *provided there is no pain or nausea.* If these are present, enemas are relied upon entirely.

"*Violent abdominal pain unattended by diarrhea contraindicates the administration of a purge.*"—Fantus.

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There are thousands of tunes but not many notes. There are twenty-six letters in the English alphabet but there are more than 500,000 words. In the Ancient Hebrew language they got along with 500 words.

At the request of the Council on Pharmacy and Chemistry, Dr. R. A. Hatcher undertook to elaborate a digitalis preparation that would be stable, that would contain a definite amount of the readily absorbable principle and that would be suitable, if possible, for intravenous administration. As a result of his work he has isolated a digitalis body which behaves unlike any constituent of digitalis heretofore described. A nearly fatal dose is eliminated within a few hours after its introduction into a cat. It remains to demonstrate the therapeutic value of this new digitalis preparation through the co-operation of the clinician and the pharmacologist. The intravenous administration of digitalis is rarely necessary if digitalis is properly given by mouth. For rare cases in which intravenous medication administration is indicated, it appears that Dr. Hatcher has prepared a drug whose action is less persistent than other digitalis preparations now available and which is simply and inexpensively prepared. (Jr. A. M. A. Apr. 14, 1923.)

The general view is that neither mercury or arsphenamin positively cures in cases in which the disease has existed long enough to become well established as a systemic disease, but that they both tend to cure and that both are valuable in treatment. It is the general opinion of syphilologists that when chancres are seen that are unmistable, these cases should be vigorously treated and that there is a good chance of aborting the disease at this time. If early cases are not treated until the Wassermann reaction has become positive, there is a difference of opinion as to treatment. There are syphilologists who believe that these early cases are better treated by mercury alone until the patient has had an opportunity to develope all the immunity of which he is capable. After the patient has established all the resistance of which he is capable, these syphilologists would treat with mercury and arsphenamin. It is becoming increasingly apparent that the advantages of the new method of treating syphilis in which arsphenamin plays the larger part, are by no means certain. The trend of the last few years has been in the direction of placing more reliance on mercury and the older methods in the treatment of syphilis. (Jr. A. M. A. Apr. 21, 1923.)

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W. E. McVEY, M.D. - - Editor

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The Annual Meeting

The fifty-seventh annual meeting of the Society was one of the largest and one of the most interesting in its history. The registration books showed that there were 410 in attendance. One of the very noticeable features was the very few failures on the program. But one of the members whose name appeared on the program failed to attend, and but one of the invited guests was absent. Comparing this with some of the meetings of years past, when at least one-third of the program failed, one must conclude that members of the Society appreciate more fully, either their duty to the Society or the benefits to be derived from the honor accorded them. The most impressive feature of the program was its excellence. The papers presented by members of the Society did not suffer in any degree by comparison with those read by our invited guests. This program, more than any heretofore presented, showed the advance which the Kansas profession is making in scientific medicine.

The entertainment was excellent as is always the case when the Society meets in Kansas City. This matter of entertainment, however, is an embarrassing one to many of the smaller cities in Kansas where the annual meetings could be held. The expense is a considerable one and where the membership is small and the expense must be carried by a few it is sometimes a considerable burden. At the last meeting of the Council a resolution was adopted to discourage the custom of entertaining the attending physicians in any expensive manner. Banquets are not the only means by which the members can be brought together for better acquaintance, in fact the banquet is not as successful in that way as the less formal luncheon or smoker. Of course the men who entertain the Society have the privilege of determining what kind of entertainment they shall offer but it is safe to say that very few members will be disappointed if the more elaborate functions are dispensed with.

Not many years ago there was usually a scramble for the next meeting of the Society, but this year voluntary bids were lacking. Dr. Mitchell came to the rescue, however, and offered to provide for the next meeting at Iola. Those who know Dr. Mitchell have no fear that he will be unable to provide all the facilities for a good meeting and all the entertainment the available time will permit, but Iola is hardly large enough and is not easily reached from a great part of the state. It will require an unusually attractive program to draw an average attendance there.

There are really but five cities in the state of sufficient size and so located as to meet the requirements for our annual meetings. These are Kansas City, Topeka, Wichita, Hutchinson and Salina. Leavenworth is large enough but is not easily reached from a considerable part of the state. In order that the problem of selecting the meeting place might be simplified a committee was appointed by the Council to prepare a schedule of meeting places—a list of available, or suitable cities and a plan of rotation. In this way the county society which is to entertain the annual meeting will know long enough beforehand to make preparations. The plan seems to contemplate the selection of the cities named as meeting places to be taken in regular rotation. In 1925, for instance, the meeting will be held in Salina, in 1926 in Hutchinson, in 1927 in Wichita, in 1928 in Topeka, in 1929

in Kansas City, and then around the circle again. Such a plan may be very satisfactory since each place would entertain the Society once in five years, on the other hand the three larger cities with their much larger memberships might easily assume a larger share of the burden.

The House of Delegates did not seem to look with great favor upon the proposal to give the members full protection against damage suits. The delegates, or many of them, seemed to think that the members of their societies would not welcome any increase in annual dues to meet obligations of this kind.

A committee was appointed to canvas the situation and submit a plan for consideration. The committee, as its report, submitted a proposal to amend the constitution so that the dues could be raised to provide for the payment of judgments as well as the cost of defense. Since an amendment to the constitution must lie over until next year the members of all the county societies will have plenty of opportunity to investigate the proposition thoroughly and instruct the delegates to the next annual meeting according to their wishes. It would have been quite as unfair to the members to reject the proposition at this meeting as to have adopted it, without giving them an opportunity to study it. A draft of the plan as it has been outlined with the reasons suggested for its adoption will be prepared and sent out to all the county secretaries. It will be unwise for any of us to determine his attitude on this subject until he has become acquainted with the plan proposed. In the meantime it is possible that the A. M. A. may inaugurate a defense plan for the whole organization and thus obviate the necessity for any action on our part.

All the papers read at the annual meeting will be published during the year. Those who were unable to attend the meeting will read these papers at their leisure. Up to this time only those who have attended the meetings have had opportunity to discuss the papers, but, since they become the property of the Society when presented, it does not seem out of place to permit further discussion through the columns of the Journal. At any rate an opportunity will be given the readers of the Journal to express their views on any of the subjects treated in these papers.

———B———

CHIPS

Man often buys his special knowledge at the cost of his common sense.

You never get any honor unless you make a study of diseases so rare that nobody ever has them.

The deviation of man from the stage in which he was originally placed by nature seems to have proved to him a prolific source of disease.

A malignant growth is cell-insubordination. An anarchist in cell society.

Bill Nye named his dog "Entomology" because he had so many boarders. The dog is known to have about forty different parasites. But poor man and the pig have more than the dog.

Man has made or constructed God in his own image.

There are as many species as there were ideas in the Divine Mind.

It is the arrangement of matter that determines the living from the so-called dead matter. On the same principles, probably, that Hamlet's soliloquy differs from the coarse joke or ribald song.

It was Metschnikoff who discovered the scavanger function of the white blood corpuscle.

Jenner made his first successful arm-to-arm inoculation with the virus of cowpox as a preventive to infection with smallpox in 1796 but did not announce his discovery until 1798. He got his idea from the Gloucestershire peasants who considered accidental cowpox (acquired in milking cows) a preventive of small pox.

It appears that inoculation of smallpox was practiced almost two centuries before Jenner's time by the Circassians. They observed

that children from six months to one year old having smallpox were seldom permanently marked and the mortality was low. Hence they inoculated in the body of the child a pustule taken from the most regular and mild case of smallpox. The Turks adopted the practice and vaccinated their children as soon as weaned.

About 1625 Lady Montague, wife of the English Ambassador to the Porte (Constantinople) had her infant inoculated. "The chaplain represented to this lady, but to no purpose, that this was an un-Christian operation, and therefore that it could succeed with none but infidels. However it succeeded admirably."

Pneumonia is one of the most common diseases, has been for centuries, and is one of the most deadly and the least under control.

Enveloping the chest with cotton, wool or poultices in pneumonia may be good practice but practiced on a well man would make him sick. The stuffy, smothery, buried, uncomfortable sensation caused by the enveloping adds to the patient's uneasiness and restlessness. Of course any kind of religion that makes a man better is a good religion. The same may be said of the treatment of pneumonia. But statistics are against success in the treatment of pneumonia as now practiced. Hence make the patient comfortable so far as can be done without adding to his misery and let him alone. In conversation with an up-to-date 20th century practitioner of medicine a few days ago, he said when he got a case of pneumonia in its early stage—in time—he seldom lost a patient. His success in curing pneumonia patients was in his mistaken diagnosis. The incipient cases, the ones he got in time were not pneumonia but catarrhal affections and those cases he did not get in time were pneumonia and he lost am many patients as his confrerees.

Chemical tests of purity, to establish the uniformity of successive lots, are applied by the manufacturers of mercurosal, but they are not content with this. Chemical tests are seconded and reinforced by physiologic tests. Rabbits and other animals are used for the test. Should an intravenous dose of 20 to 25 milligrams per kilo of body weight kill the animal, the drug is rejected, even though the chemical test may have shown it to be pure. On the animal test basis, the lethal dose for a man weighing 68 kilos, or 150 pounds, would be at least 1300 milligrams (1.3 gm.), thirteen times the recommended intravenous dose.

The Abbott Laboratories, Chicago, are distributing to physicians requesting it, a very useful monograph on the treatment of syphilis. It brings out the salient facts pertaining to the use of the arsphenamines in this disease, including a simplified technic for preparing and injecting solutions.

Among the best informed people in the profession the opinion is general that neoarsphenamine, D. R. L., is the most reliable drug. From 25,000 injections recorded at the Polyclinic Hospital, Philadelphia, there has never been a fatality, nor even a case of nephritis attributable to the drug. That is a wonderful showing.

The Council on Pharmacy and Chemistry has published a preliminary report on the experimental status of ethylene as an anesthetic. A. B. Luckhardt and J. B. Carter report that animal experiments with ethylene indicate that ethylene has a direct action on the nervous system when a concentration of 90 per cent is used; that the motor reflexes are abolished at this concentration, and that the phenomena produced by the undiluted gas are partly asphyxia, which factor can be removed by the addition of oxygen, when it is seen that narcosis results from the ethylene itself. Trials carried out on human subjects appear to confirm the anesthetic value of ethylene. The investigators believe that ethylene will be found more desirable than nitrous oxid, but the experiments reported have been carried out on persons in normal health only. The Council reports that confirmation of the work is necessary before ethylene can be admitted to new and non-official remedies, but that further research with the gas is warranted. As a preliminary to such research, the Council cautions that the quality of the product must be determined. (Jr. A. M. A. Apr. 7, 1923.)

Recently a statistical report regarding the possible influence of alcohol on the prognosis of pneumonia in a large municipal hospital has been published. The data for nearly 3,500 cases of lobar pneumonia showed that, with reference to the patient's habits of indulgence in alcoholic drinks, that the mortality was higher in moderate users than in light users or abstainers, and that the mortality is much higher in excessive users than in moderate users. It must be borne in mind, however, that these statistics have no bearing on the use of alcohol in therapy. (J. A. M. A. Apr. 7, 1923.)

An accident from the precipitation of mercurochrome-220 soluble by procain has been reported. The A. M. A. Chemical Laboratory has cnofirmed the incompatibility. The following local anesthetics were found to give precipitates when treated with mercurochrome-220 soluble solution; alypin, apothesin, benzocain, butyn, cocain hydrochlorid, Beucain lactate, phenacain, procain, propaesin, quinin and urea hydrochlorid, tropacocain hydrochlorid and stovain. Many vegetable alkaloids were also found to be incompatible with mercurochrome-220 soluble. (Jr. A. M. A. Apr. 14, 1923.)

———B———

Reminders by the Prodigal

We are told that: The oldest machine is the human body. Age of itself may not be a merit. But it has, at least, staying qualities to its credit. As we see it the human body is the finished product. It may be touched up a little here and there as we pass adown the vista of time, as contingencies arise necessitating more acute sensitization and simplicity in perfecting the orgnaism. But it fills the plans and specifications of our immediate wants.

The pineal body was once an eye in the top of man's head. This top eye would be a great convenience in arboreal life. It may develop again if there is too much monkey business continued.

Mind cannot be measured, but inferred, only, from the outward behavior of the creature. And that it is of our own mind that we can have direct knowledge? (Sometimes.)

The heart pumps five pints of blood each minute when the person is at rest. During a quick walk seventeen pints and a quick run up stairs thirty-seven pints. There are approximately 14 pints of blood in the body of an averaged sized man—that this amount of blood passes through the left ventricle of the heart and all around the body in a single minute. The plumbing system of the human body is practically perfect. An emergency is provided for also. The difference between five pints and thirty-seven pints of blood passing through the circulatory system in the same length of time means an increased pressure of 640 per cent so that this system of plumbing took good material for its construction and a specialist workman to do it.

There are approximately 6,000,000 vesicles or minute air chambers in the lungs of the average person, and if the inner surface of these vesicles was spread out the surface covered would equal an area one hundred times greater than the skin. We exhale about one-fifth of the air in the lungs each breath. The air cells close if we try to force exhalation of too much air in the lungs each breath. This makes breathing fool proof.

The saliva is 99 per cent water and food does not go down into the stomach—it is pumped down.

Red blood corpuscles are mostly made in the marrow of the bone and when they have served their purpose, worn out, they are destroyed in the spleen and liver.

The liver and pancreas each pour out about one pint of fluid daily into the bowel.

There are about 5,000,000 red blood corpuscles to the cubic centimeter.

There are 107 organs, or parts of organs, in the human body that are more or less vestigeal. Hence nature appears to be simplifying the human body. She is enabled to do so by developing the potential energy of man's gray matter.

Degeneration of the teeth can be prevented by using the teeth to break up the food instead of cooking it.

Notice of an injury to a part of the body conveyed to the receiving nerve center and returned notice what to do it not an electric wave or else it is greatly retarded. For if an

electric current, purely, the messages would be conveyed a million times quicker.

The oldest part of the brain is the hind part—cerebellum and medulla oblongata. There is no correspondence between the functioning of the various parts of the brain and the overlapping parts of the head (the skull) so far as known and that phrenologists claim.

There is no theory of sleep satisfactory. It is only a very thin rind or cortex of nervous matter, about one-ninth of an inch thick on the average, covering the fore part of the brain (from the top of the head to the base of the forehead) which is the organ of consciousness.

SOCIETIES

FRANKLIN COUNTY SOCIETY

The Franklin County Medical Society met in the dining room of the North American Hotel, April 26.

Dr. R. C. Dugan was elected a delegate to the annual meeting of the Kansas Medical Society and Dr. G. C. Mahaffy was elected alternate. Lance C. Hill presented a proposition to open a pathological laboratory in Ottawa, which proposal was endorsed by the society and recommended for the consideration of other civic organizations.

Dr. C. C. Nesselrode of Kansas City discussed the problems of exophthalmic goiter and other affections of the thyroid gland.

G. C. Mahaffy, Sec.

THE TRI-COUNTY MEDICAL SOCIETY

Last summer members of the Cowley County and the Sumner County, Kansas, Medical Societies and the Kay County, Oklahoma, Medical Society met at Arkansas City to organize the three county societies into an association for mutual benefits. The first meeting was held at that time in Arkansas City. The second meeting was held in Wellington last fall. The third meeting was held in Blackwell, Okla., on April 19, 1923. Each of the meetings were profitable, but the Blackwell meeting was the climax of the association meetings for the year. In reviewing the results of the association work for the year, the chairman spoke of benefits and privileges that had been afforded and expressed the hope that now, after a year's trial, the society might be formed into a permanent organization. This was the sentiment of all present and accordingly Dr. Risser of Blackwell was elected president for the coming year, and Dr. Hawkins, also of Blackwell, was elected secretary.

The Kay County Medical Society and the Blackwell Chamber of Commerce met the expense of entertainment of the members from the other counties, and the provisions made were broad and liberal. The warm, brotherly spirit of the Kay County men was evidenced in the royal welcome accorded and in the wholesome entertainment provided. There were more than a hundred persons present at this meeting. Many of the doctors brought their wives. The visiting ladies were splendidly entertained by the wives of the local physicians. The morning hours were devoted to visiting various places of interest about the city. The Blackwell Country Club opened its fine golf course to the use of those who wished to play. At 12:30 p. m. the doctors and their wives met together at the gymnasium of the Presbyterian Church where a first class, wholesome lunch was provided. Some solos and music added much to the pleasantness of the hour.

The afternoon session of the society was convened at 2 p. m. in the lecture room of the Blackwell Hospital. Some very interesting clinical cases were presented. Those who were especially interested in eye, ear, nose and throat work gathered in a room on the main floor of the hospital to study some cases in this specialty. The others devoted some time to the study of some medical cases of unusual interest. The scientific programme was as follows:

Paper—Cholecystitis. By Dr. E. F. Day, Arkansas City, Kan. Discussion opened by Dr. Snyder, Winfield, Kan.

Paper—Some Remarks on the Diagnosis and Management of Pulmonary Tuberculosis. By Dr. L. J. Moorman, Oklahoma City.

Address—Diseases of the Mind and Brain. By Dr. Karl A. Menninger, Topeka, Kan.

At 6 p. m. the physicians and ladies came together again at the Presbyterian gymnasium where a bounteous, hygienic dinner

was served. The High School Orchestra furnished music. Some select readings by one of the High School pupils presented intimate views of real life and caused must laughter.

The evening session convened at 7:30 p. m. in the auditorium of the High School and to this the public was invited. The following was the programme of the evening:

Address—Public Health Problems. By Dr. A. E. Davenport of Oklahoma City, State Health Commissioner.

Paper—Congenital Hip-Joint Dislocations, Pathology and Symptomatology. By Dr. Robert Werndorff of Wellington, Kan.

Address—Mental Hygiene. By Dr. Karl Menninger of Topeka, Kan.

It was felt by all that the Blackwell meeting was a most interesting and profitable one, and it was the general opinion that the association meetings of the past year had been a grand success. Through them the fraternal spirit has been broadened and strengthened, and the association of the different county societies has afforded splendid opportunity for the study and consideration of important scientific and medical problems which has proven highly beneficial to all. The Tri-County Medical Society has now become permenantly established and will become more helpful to its members during the coming year. The next meeting of the association is to be held at Winfield, Kansas.

PRATT COUNTY SOCIETY

Pratt County Medical Society met March 5th, 8 p. m. at the Commercial Club room in Pratt. The meeting was called to order by the president, Dr. W. G. Maness of Preston. A paper was read by Dr. Harry Blasdel of Hutchinson on "Carcinoma." The importance of early recognition and treatment of pre-cancerous skin lesions was the first consideration. A partial list of these probably or possibly cancerous skin diseases includes xeroderma pigmentosa, pigmented moles, melanoma, senile keratoses, rhodent ulcer and leukoplakia. An efficient operation for radical treatment of cancer of the lip with lymphatic treatment was described.

Drs. H. Atkins, W. F. Bernstorf, J. R. Campbell, Athol Cochran, P. K. Gaston, M. C. Jenkins, W. G. Maness, G. E. Martin, and E. M. Ireland were present.

On April 2d Pratt County Medical Society met at the usual time and place. Vice President H. Atkins called the meeting to order. Dr. Ralph H. Major, head of the Department of Internal Medicine of Kansas University Medical School at Rosedale, read a paper on the "Insulin Treatment of Diabetes." He is working with Toronto investigators to discover the possibilities and limits of the new remedy. The internal secretion of the pancreas is given hypodermically in standardized dosage and causes the urine of diabetics to become sugar free and there is also a rapid reduction of the blood sugar. Excessive reduction of the blood sugar causes convulsions so that it is necessary to conrtol the use of the remedy with blood sugar estimations. A heretofore unknown recovery from diabetic coma was recorded, and several very striking improvements in cases with an otherwise hopeless prognosis. It is hoped that the pancreatic internal secretion of these patients may be stimulated or improved so that the continued hypodermic use of insulin may be finally discontinued. The method of preparation of this internal secretion was described. It is now prepared by Ely Lilly & Company under the trade name of Iletin.

Questions and discussion followed the paper until it was time for Dr. Major to take his train for Rosedale.

Drs. H. Atkins, W. F. Bernstorf, C. F. Bucklin, J. R. Campbell, Athol Cochran, P. K. Gaston, M. C. Jenkins, G. E. Martin, C. E. Phillips, and E. M. Ireland were present.

G. E. Martin, Secretary.

COFFEY COUNTY MEDICAL SOCIETY

The regular meeting of the Coffey County Medical Society was held in Burlington, April 5, 1923. It started off with a "feed" at the National Hotel after which we met in Dr. Gray's office and listened to case reports and interesting discussions on similar cases. After about three hours discussion the old officers were re-elected and one new member was voted into the society—Dr. Connor of Waverly who moved into the county within the last year. The next meeting will

be a picnic at LeRoy and is to include the doctors and their wives.

The doctors present at the meeting were: Salisbury, Norris, Gray, McConnell, Manson, Thines, of Burlington; Fear and Connor of Waverly; Herring and McGinnis of LeRoy.

A. B. McConnell, Secretary.

FINNEY COUNTY SOCIETY

At a regular meeting of the Finney County Medical Society held Dec. 27, 1922, the following officers were elected: Dr. Charles Rewerts, President; Dr. G. R. Hastings, Vice President; Dr. C. O. Rogne, Secretary; Dr. A. L. Brown, Treasurer. Dr. Rewerts read a paper on small pox at this meeting.

Early in January Dr. Rogne moved to a new location and we have not been able to find all the records of this society, so we do not know whether or not you have been notified of the result of this meeting. At a regular meeting of the Society, March 28, 1923, Dr. A. L. Brown was formally elected as secretary and treasurer.

Owing to the epidemics of flu in this neighborhood we have not been able to meet as often as we wished but hope we may get together more frequently from now on.

Albert L. Brown, M.D., Secretary.

DEATHS

Dr. R. W. Maintz, Linn, aged 59, died April 2, 1923, from paralysis. He was graduated from Washington University School of Medicine in 1889 locating in Linn the same year. He served one term in the Kansas Legislature and took an active part in all worthy public enterprises. He was a member of the County and State Medical Societies.

Notice of Examination for Entrance Into the Regular Corps of the United States Public Health Service

Examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held at the following named places on the dates specified:

At Washington, D. C.....July 9, 1923
At Chicago, Illinois.....July 9, 1923
At San Francisco, Cal.....July 9, 1923

Candidates must be not less than twenty-three or more than thirty-two years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written, and clinical tests before a board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President with the advice and consent of the senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Required by the Act of Congress of August 24, 1912, of the Journal of the Kansas Medical Society Published Monthly at Topeka, Kansas, for April 1, 1923

State of Kansas, County of Shawnee, ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared W. E. McVey, who, having been duly sworn according to law, deposes and says that he is the editor of the Journal of the Kansas Medical Society and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of	Post Office Address
Publisher—W. E. McVey, under direction of the Council of the Kansas Medical Society	Topeka, Kansas
Editor—W. E. McVey	Topeka, Kansas
Managing Editor—None.	
Business Manager—None.	

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

Kansas Medical Society, M. L. Perry, Topeka, Kansas, President; Dr. J. F. Hassig, Kansas City, Kansas, Secretary; Dr. Geo. M. Gray, Kansas City, Kansas, Treasurer.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stock-

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holder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only).

W. E. McVEY, Editor.

Sworn to and subscribed before me this 29th day of March, 1923.

W. F. WEBBER,
Notary Public.

(Seal)

(My commission expires Jan. 30, 1924.)

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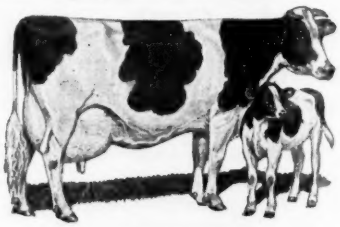

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Nursing in Surgical Diseases	20
Materia Medica and Therapeutics	20
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Nursing in Diseases of Infants and Children (including Infant Feeding)	20
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Operating-room Technique	10
Obstetrical Nursing	20
Nursing in Diseases of the Eye, Ear, Nose and Throat	10

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Nursing in Mental and Nervous Diseases	20
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Modern Social Conditions	10
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Introduction to Private Nursing	10 hours	
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At the end of the preliminary term the pupils are required to wear the uniform supplied by the Hospital. Three uniforms, eight aprons, collars and cuffs will be furnished annually. Uniforms, or uniform material in excess of the above, will be furnished the pupil at her expense. The school furnishes shoes which are approved by the Directress. Pupils shall wear their uniforms at all times on duty.

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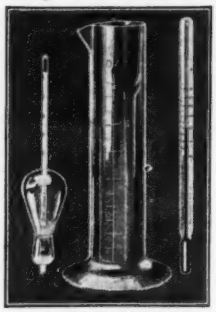

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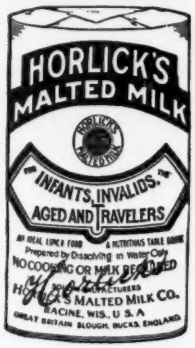

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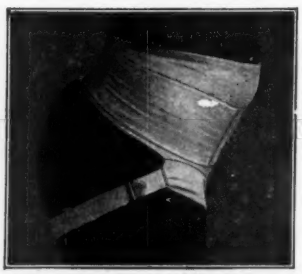

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DETROIT, MICH.

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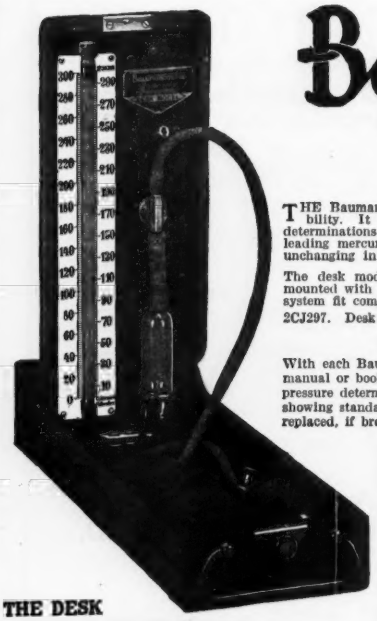

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Secretary——J. F. HASSIG, M.D.——Kansas City Treasurer——GEO. M. GRAY——Kansas City

Defense Board—Dr. O. P. Davis, Chairman, Topeka; Dr. D. R. Stoner, Ellis; Dr. J. A. Dillon, Larned. **Executive Committee of Council**—Dr. M. L. Perry, Chairman, Topeka; Dr. J. F. Hassig, Kansas City; Dr. Geo. M. Gray, Kansas City; Dr. O. P. Davis, Topeka; Dr. C. C. Goddard, Leavenworth. **Committee on Public Health and Education**—Dr. S. J. Crumbine, Chairman, Topeka; Dr. Jas. W. May, Kansas City; Dr. O. D. Walker, Salina; Dr. H E. Haskins, Kingman; Dr. E. L. Morgan, Phillipsburg.

Committee on Public Policy and Legislation—Dr. W S. Lindsay, Chairman, Topeka; Dr C. S. Huffman, Columbus; Dr. J. A. Milligan, Garnett; Dr. M. L. Perry, President ex-officio; Dr. J. F. Hassig, Secretary ex-officio.

Committee on Hospital Survey—Dr. Geo. M. Gray, Chairman, Kansas City; Dr. Jno. L. Evans, Wichita; Dr. W. M. Mills, Topeka.

Committee on Medical History—Dr. W E. McVey, Chairman, Topeka; Dr. W. S. Lindsay, Topeka; Dr O. D. Walker, Salina.

Committee on Scientific Work—Dr. J. F. Hassig, Chairman, Kansas City; Dr. H. L. Chambers, Lawrence; Dr. F. A. Carmichale, Osawatomie.

Committee on School of Medicine—Dr. C Nesselrode, Chairman, Kansas City; Dr. Harry W. Horn, Wichita; Dr. Alfred O'Donnel, Ellsworth; Dr. Frank A. Trump, Ottawa; Dr. J. J. Brownlee, Hutchinson.

Committee on Necrology—Dr. E. E. Liggett, Chairman, Oswego; Dr. J. F. Hassig, Kansas City; Dr. W. E. McVey, Topeka.

Members of Component County Societies are members of the Kansas Medical Society. Physicians residing in counties where no County Society exists may join the society of an adjoining county. Physicians residing where no county society exists, who are members of a district or other independent society approved by the Council, may be admitted to membership.

ANNUAL DUES $3.00, due on or before February 1st of each year.

Dues should be paid to the Secretary of the Component County Society, or, if not a member of a County Society, to the Secretary of the Kansas Medical Society.

OFFICERS FOR 1923

COUNTY	PRESIDENT	SECRETARY	
Allen	W. R. Heylmun, Iola	P. S. Mitchel, Iola	
Anderson	T. A. Hood, Garnett	J. A. Milligan, Garnett	2d Wednesday
Atchison	C. W. Robinson, Atchison	T. E. Horner, Atchison	1st Wed. ex. July and August
Barton	B. S. Pennington, Hoisington	L. J. Wheeler, Great Bend	1st Tues., Jan., Apr., June, Oct.
Bourbon	R. Aikman, Ft. Scott	W. T. Wilkening, Ft. Scott	2d Monday
Brown	E. J. Leigh, Hiawatha	J. M. Robinson, Hiawatha	2d Friday
Butler	F. A. Garvin, Agusta	W. J. Eilerts, ElDorado	2d Friday
Central Kansas	D. R. Stoner, Ellis.	L. V. Turgeon, Wilson	
Chautauqua	W. T. Courtwright, Sedan	W. L. McNaughton, Sedan	
Cherokee	R. C. Lowdermilk Galena	J. D. Graham, Columbus	2d Monday
Clay	C. E. Earnest, Clay Center	R. J. Morton, Clay Center	2d Wednesday
Cloud	C. W. Caton, Concordia	Ross E. Weaver, Concordia.	Last Thursday
Coffey	J. C. Fear, Waverly	A. B. McConnell, Burlington	
Cowley	C. R. Spain, Arkansas City	M. M. Miller, Ark. City	1st Tues. ex. July, Aug., Sept.
Crawford	M. K. Scott, Frontenac	H. L. Church, Pittsburg	3d Thursday
Dickinson	H. R. Turner, Hope	E. J. Reichley, Herington	
Doniphan	W. W. Carter, Wathena	W. M. Boone, Highland	1st Tues., Ja., April, July Oct.
Douglas	H. L. Chambers, Lawrence	H. T. Jones, Lawrence	1st Thursday
Elk	R. C. Hanner, Howard	F. L. DePew, Howard	Called
Finney	A. L. Brown, Garden City	Chas. Rewerts	
Ford	T. L. McCarty, Dodge City	W. F. Pine, Dodge City	Last Wednesday
Franklin	F. C. Herr, Ottawa	G. C. Mahaffy, Ottawa	
Harper	A. E. Walker, Anthony	H. W. Gaume, Harper	3d Wednes. Mar., June, Sept., Dec.
Harvey	M. C. Martin, Newton	F. L. Abbey, Newton	First Monday
Jackson	J. B. Smythe, Holton	C. A. Wyatt, Holton	1st Wednes. Jan., Apr., July, Oct.
Jewell	J. E. Hawley, Burr Oak	L. V. Hill, Randall	
Johnson	F. F. Green, Olathe	J. T. Orr, Olathe	
Kingman	R. W. Springer, Kingman	A. M. Dick, Kingman	2d Thurs. ex. Summer months
Labette	E. E. Liggett, Oswego	J. D. Pace, Parsons	4th Wednesday
Leavenworth	F. J. Haas, Leavenworth	J. L. Everhardy, Leavenworth	2d and 4th Mondays
Lincoln	A. M. Townsdin, Barnard	Malcolm Newlon, Lincoln	2d Thursday
Linn	J. R. Shumway, Pleasanton	W. P. Irwin, Pleasanton	2d and 4th Fridays
Lyon	O. J. Corbett, Emporia	M. T. Capps, Emporia	1st Tuesday
Marion	W. E. Stone, Florence	J. J. Entz, Marion	2d Wednesday each month
Marshall		J. L. Eddy, Marysville	Last Thurs. July, Oct., Jan., April
Meade-Seward	F. W. Huddleston, Liberal	J. W. Messersmith, Liberal	
Miami	F. A. Carmichael, Osawatomie	A. G. Dumas, Osawatomie	Last Friday
Mitchell		E. E. Brewer, Beloit	
Montgomery	D. W. Howell, Caney	J. A. Pinkston, Independence	2d Friday
McPherson	P. W. Backman, Lindsborg	Frank Oberg, Marquette	
Nemaha	W. R. Dillingham, Sabetha	S. Murdock, Sabetha	Last Thursday every other month
Neosho	L. D. Johnson, Chanute	E. R. Furgason, Chanute	Second Monday
Norton-Decatur	H. O. Hardesty, Jennings	C. S. Kenney, Norton	Called
Osborne	J. E. Henshall, Osborne	S. J. Schwaup, Osborne	
Pawnee		E. A. Reed, Larned	Second Tuesday
Pratt	W. H. Maness, Preston	C. E. Martin, Cullison	First Monday
Reno	G. A. Blasdel, Hutchinson	C. D. McKeown, Hutchinson	4th Friday
Republic	J. W. West, Narka	H. D. Thomas, Belleville	2d Thursday in November
Rice	L. E. Vermillion, Lyons	J. H. Powers, Little River	Last Thursday
Riley	J. D. Colt, Jr., Manhattan	J. W. Evans, Manhattan	2d Monday
Saline	A. L. Cludas, Minneapolis	R. E. Cheney, Salina	2d Thursday
Sedgwick	W. P. Callahan, Wichita	Leon Majassarin, Wichita	1st and 3d Tuesdays
Shawnee	H. B. Hogeboom, Topeka	E. G. Brown, Topeka	1st Monday
Smith		V. E. Watts, Smith Center	Called
Stafford	M. M. Hart, Macksville	J. T. Scott, St. John	2d Wednesday
Sumner	H. G. Shelley, Mulvane	T. H. Jamieson, Wellington	Last Thursday every quarter
Washington	H. D. Smith, Washington	W. M. Earnest, Washington	
Wilson	O. D. Sharpe, Neodesha	E. C. Duncan, Fredonia	2d Tues. Dec., March, June, Sept.
Woodson	M. S. Reynolds, Yates Center	O. E. Robinson, Yates Center	
Wyandotte	J. A. Jones, Kansas City	L. B. Spake, Kansas City	Every 2d Tues. ex Summer months

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8x10 Eastman Screen, single...	6.75	8x10 Eastman Screen, pair.....	12.65
10x12 Eastman Screen, single....	10.15	10x12 Eastman Screen, pair.....	19.00
11x14 Eastman Screen, single....	13.50	11x14 Eastman Screen, pair.....	24.50
14x17 Eastman Screen, single....	20.25	14x17 Eastman Screen, pair.....	35.00

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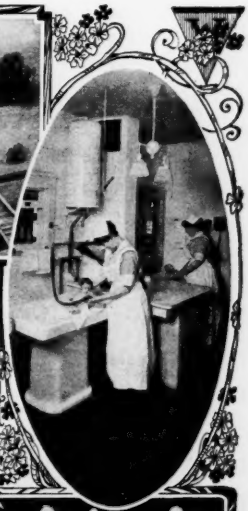

Application for Membership

To the Officers and Members of the

_____*County Medical Society*

GENTLEMEN:—I hereby make application for membership in your Society, and, if accepted as a member, I agree to support its Constitution and By-Laws, to practice in accordance with the established usages of the profession, and will in no way profess adherence or give my support to any exclusive dogma or school.

1. I was born at.....on the.....day of 1

2. My preliminary education was obtained at ....
(Public schools, high school or college)

.....located at..... from which I
(City and State)

graduated in the year 1.....and received the degree of .....

3. My medical education was obtained at .....
(Name of Medical College)

....located at..... ....

from which I graduated in the year 1..... .....

4. My state certificate was issued .....
(Name of state and date of license under which you are practicing)

5. I have practiced at my present location years; and at the following places for the years named

....
(Name each location and give dates)

.....

.....

.....

6. I hold the following positions:.....
(Give college and hospital positions, insurance companies for which you are examiner, etc.)

.....

.....

.....

7. Specialty ... .

8. Residence.....Street

9. Office.....Street

10. Office Hours.....

Respectfully, Name.....

P. O.....

County .....

State.....

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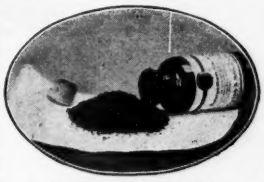

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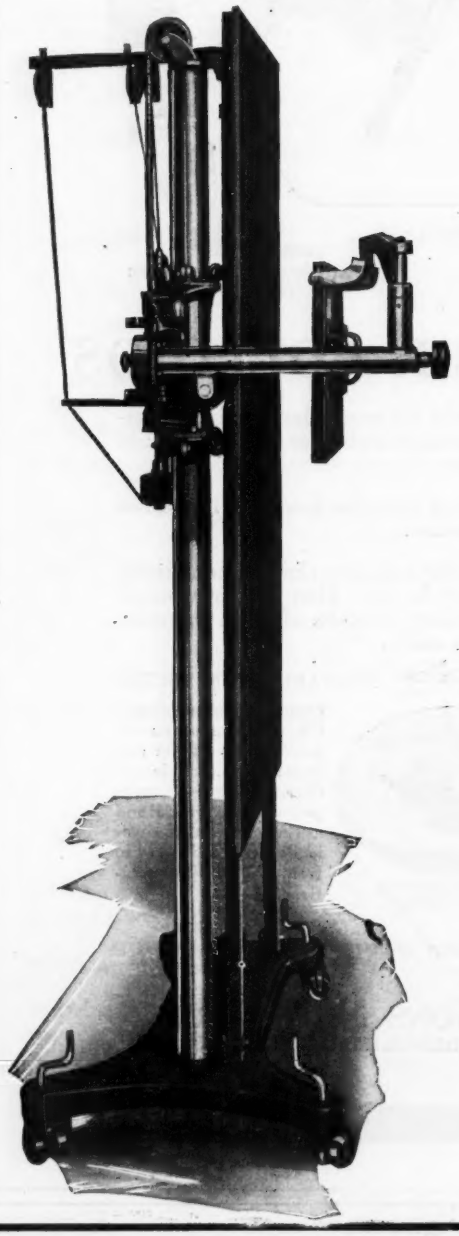

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